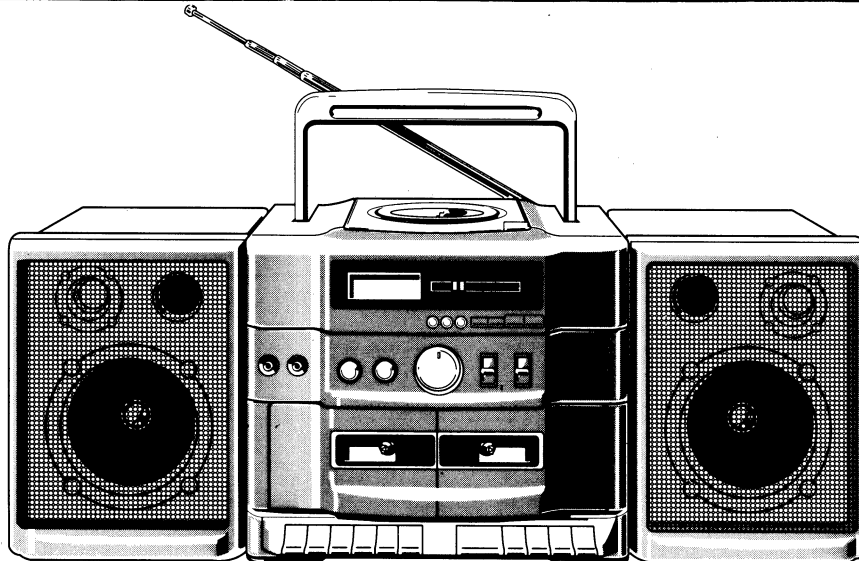


SERVICE MANUAL

MODEL: PCD-720

RADIO CASSETTE RECORDER WITH COMPACT DISC PLAYER



PCD-720

SPECIFICATION

GENERAL

Frequency response	: 20-20000Hz
Speakers	: Woofer : ϕ 100mm x 2 (4 Ω) Tweeter : ϕ 27mm x 2
Maximum output	: 4W/CH (RMS) at DC
Power source	: AC : See label rating DC: 13.5V (D, RM1, HP2 x 9)
Power consumption	: 18W
Dimension	: W640 x D220 x H242.5
Weight	: 5.3Kg (W/O batteries)
Headphone jack	: ϕ 3.5mm (stereo)

TAPE RECORDER

Track system	: 4 track 2 channel
Recording system	: AC bias (DECK A)
Erasing system	: Magnetic erasing (DECK A)
Monitor system	: Variable monitor
Frequency response	: Normal 50 – 6300Hz
Tape speed	: 4.75cm/sec (Normal speed) 9.5cm/sec (High speed)
Tape drive system	: Capstan belt driven
Tape loading system	: Front loading
Motor system	: DC synchronous 2 speed motor (DC 12V)

RADIO

Frequency range	: FM : 88 – 108MHz AM : 530 – 1705KHz(OPTION) AM : 530 – 1605KHz SW : 6– 18MHz LW : 150 – 285KHz
I.F	: FM : 10.7MHz AM : 455KHz/465KHz(OPTION)
Antenna	: FM (SW): Telescopic rod antenna AM (LW) : Ferrite bar antenna

COMPACT DISC PLAYER

Frequency range	: 20–20,000Hz
Dynamic range	: 83 dB (1KHz) with filter
Signal to Noise ratio	: 82 dB (1KHz) with filter
wow and flutter	: 0.001%
D/A conversion	: 16 bit

Design and specifications are subject to change upon improvement without prior notice.

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— OPTION —

UL/CSA : American (UL)/Canadian (CSA) model
FTZ : Germany model
BS : UK model

AUS : Australian model
LW : LW band equipped unit
SW : SW band equipped unit

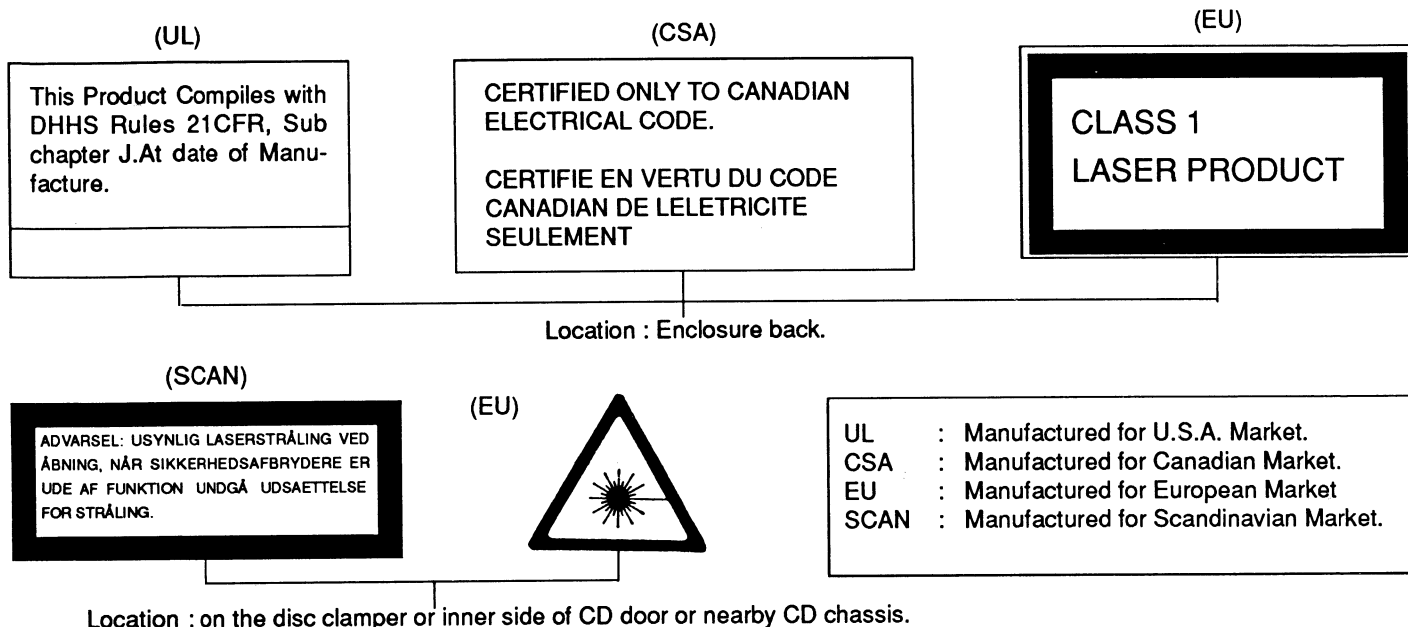
SAFETY PRECAUTION

1. CLASS1 LASER PRODUCT

This compact disc player is classified as a CLASS 1 laser product.

2. LASER WARNING LABEL

The label shown below may be affixed or not according to country.



3. LASER BEAM WARNING

- ADVERSEL** — USYNLIG LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGA UDSÆTTELSE FOR STRÅLING.
- VARNING** — OSYNLIG LASERSTRÅLNING NÅR DENNA DEL ÄR ÖPPNAD OCH SPÄRR ÄR URKOPPLAD. STRALEN ÄR FARLIG.
- VARITUS** — LAITE SISÄLTÄÄ LASERDIODIN, JOKA LÄHETTÄÄ NÄKYMÄTÖNTÄ SILMILLE VAARALLISTA LASERSATEILYÄ.
- CAUTION** — INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED. AVOID EXPOSURE TO BEAM.

4. LASER DIODE SPECIFICATION (OPTICAL PICK-UP)

- o Material: AlGaAs
- o Wavelength: 760-800nm
- o Emission duration: Continuous
- o Laser Output: 0.2mW
- o * This output is the value measured at distance 1.6mm from the objective lens surface on the optical pick-up block.
- o Classification: CLASS 1

5. WARNING FOR SERVICING

- WARNING:** When servicing, do not approach the LASER exit with the eye too closely. In case it is necessary to confirm LASER beam emission, be sure to observe from a distance of more than 30cm from the surface of the objective lens on the optical pick-up block.
- VARNING:** När underhållningsarbeten utförs, närma dig försiktigt och se inte på laserutstrålningen på för nära håll. Ifall det är nödvändigt att betrygga laserstrålens utströmning. Var säker att kontrollera detta från ett avstånd av mer än 30cm (11.81 inch.) från den objektiva linsens yta på den optiska utsändningspunkten.
- ADVARSEL:** Når repareringsarbejdet udfoeres, naerm dig forsigtigt og se ikke på laserudstrålingen på for naer hånd. It ilfaeldet at det er noedvaendigt at bestemme laserstrålens udstråling. Vaer sikker på kontrollere dette fra en afstand af mere end 30cm (11.81 inch.) fra den objektive linsens overflade på den optiske udsendningspunkt.
- VAROITUS:** Silmiä on varottava viemästä liian läbeie Laser-poistokanavaa huoiion aikana. Jos on välttämätöntä varmistaa Laser-Säteen päästö, pysyttels sitä tarkasteltaessa vähintään 30cm etäiyydellä optisen lukon objektiivinlinssin pinnasta.

SERVICING NOTE

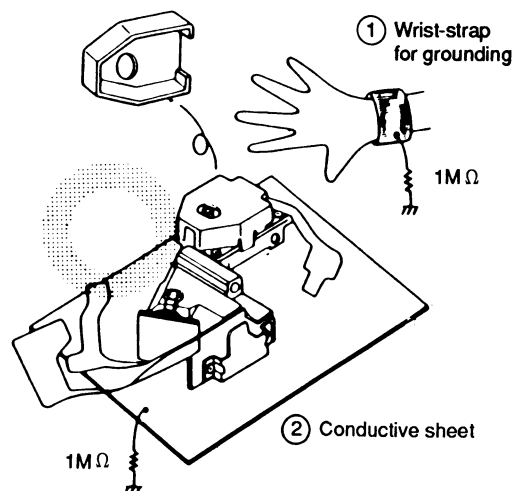
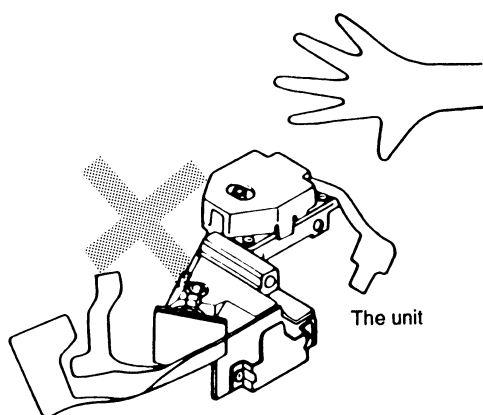
1. Disconnect power supply cord before separating cabinet for servicing as you may experience an electric shock.
2. Avoid repairing under direct sunshine and heat which may cause cabinet, transistor and IC to be transformed or misoperate.
3. Use a soft cotton swab moistened with warm water or neutral cleaner when parts of a unit need to be cleaned.
4. When replacing parts with safety features built in, be sure to use specified parts with same specifications only.
5. Avoid repairing the set near a TV or any other magnetic forces.
6. Disconnect the plug from wall socket during electric storm to reduce the risk of damage.
7. Be careful of electrostatic damage when replacing the control IC such as μ -COM, LSI and pick-up.

HANDLING THE OPTICAL PICK-UP

- * The laser diode in the optical pick up may suffer electrostatic breakdown because of potential static electricity from clothing and your body.

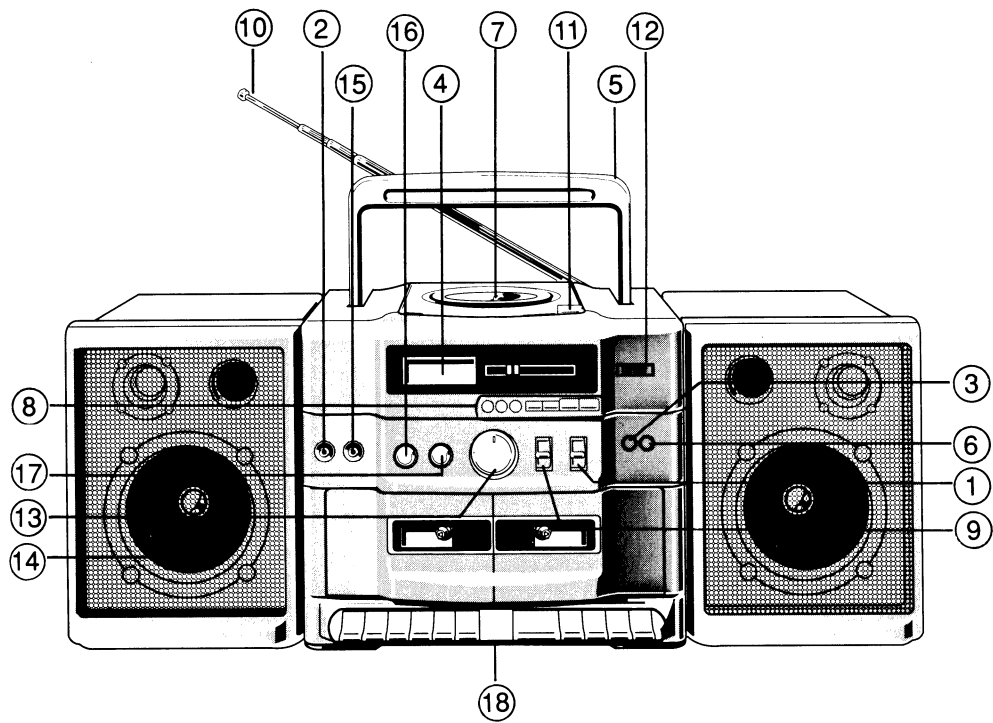
The following method is recommended.

1. Place a conductive sheet on the workbench. (The black sheet used as wrapping for repair parts.)
 2. Place the set on the conductive sheet so that the chassis is grounded to the sheet.
 3. Place your hands on the conductive sheet. (This gives them the same ground as the sheet.)
 4. Remove the optical pick up block.
 5. Perform work on top of the conductive sheet.
- Be careful not to let your clothes or any other static sources touch the unit.
- * Be sure to put on a wrist-strap grounded to the sheet.
 - * Be sure to lay a conductive sheet made of copper etc. which is grounded to the table.

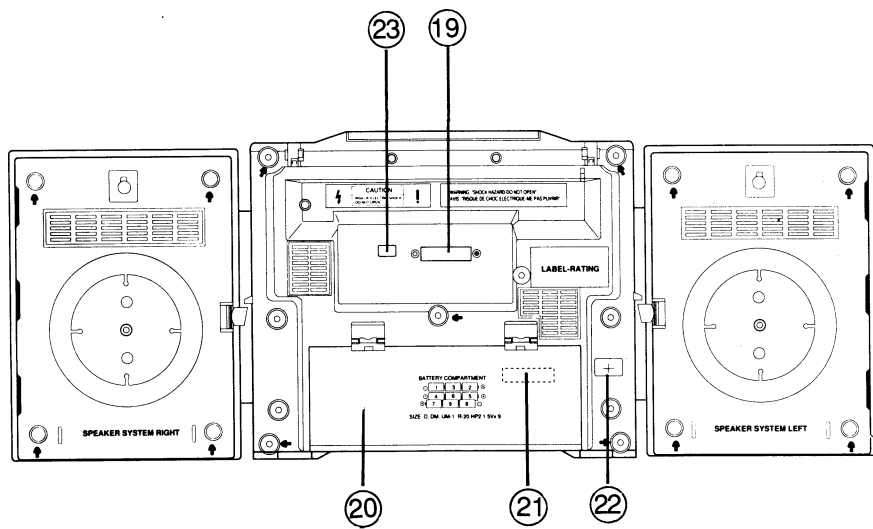


LOCATION OF CONTROLS

FRONT panel



REAR panel



<Front Panel>

1. BAND Selector
2. PHONES jack
3. POWER indicator
4. CD operation LCD
5. Handle
6. FM-ST indicator
7. CD door
8. CD operation buttons
BACK/REW button
NEXT/FF button
PROG button
DISPLAY button
MODE button
STOP button
PLAY/PAUSE button
9. DUBB/FUNCTION selector
10. Rod antenna
11. PUSH OPEN button (CD)
12. TUNING knob
13. VOLUME control
14. Speaker
15. BALANCE control

16. BASS control
17. TREBLE control
18. Deck control button
RECODE button (DECK A only)
PLAY button
REW button
F.FWD button
STOP/EJECT button
PAUSE button

<Rear Panel>

19. Speaker Terminal
20. Battery compartment
21. Voltage selector (optional)
22. AC IN ~ socket
23. MODE/BEAT CUT selector

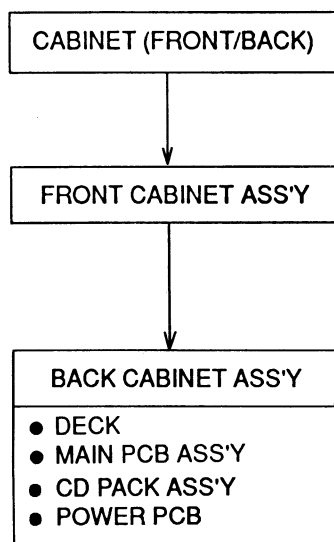
<CD Operation LCD>

24. Play indicator
25. Pause indicator
26. INTRO, SHUFFLE, PROGRAM, REPEAT, ALL indicators
27. Track number indicator
28. Time indicator
29. Track number display (CD CALENDAR)
30. SYNCHRO RECORDING indicator

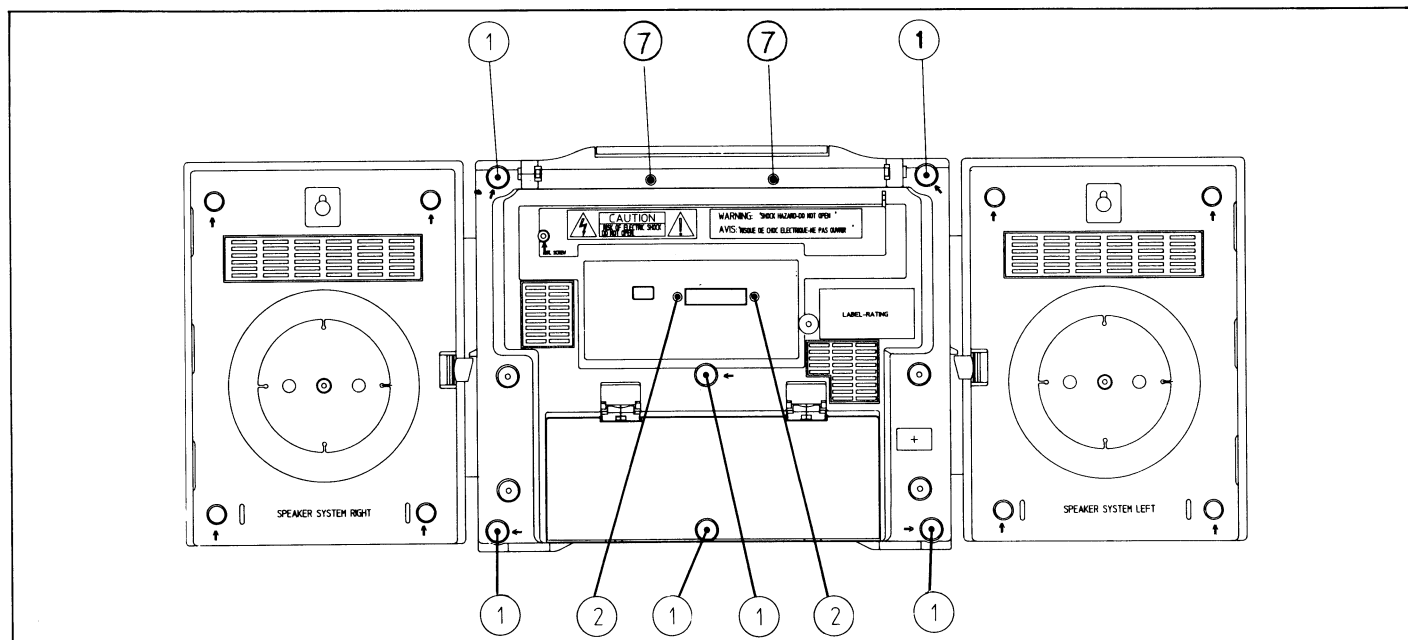


■ DISASSEMBLY INSTRUCTION

PROCEDURE OUTLINE



1. FRONT & BACK CABINET



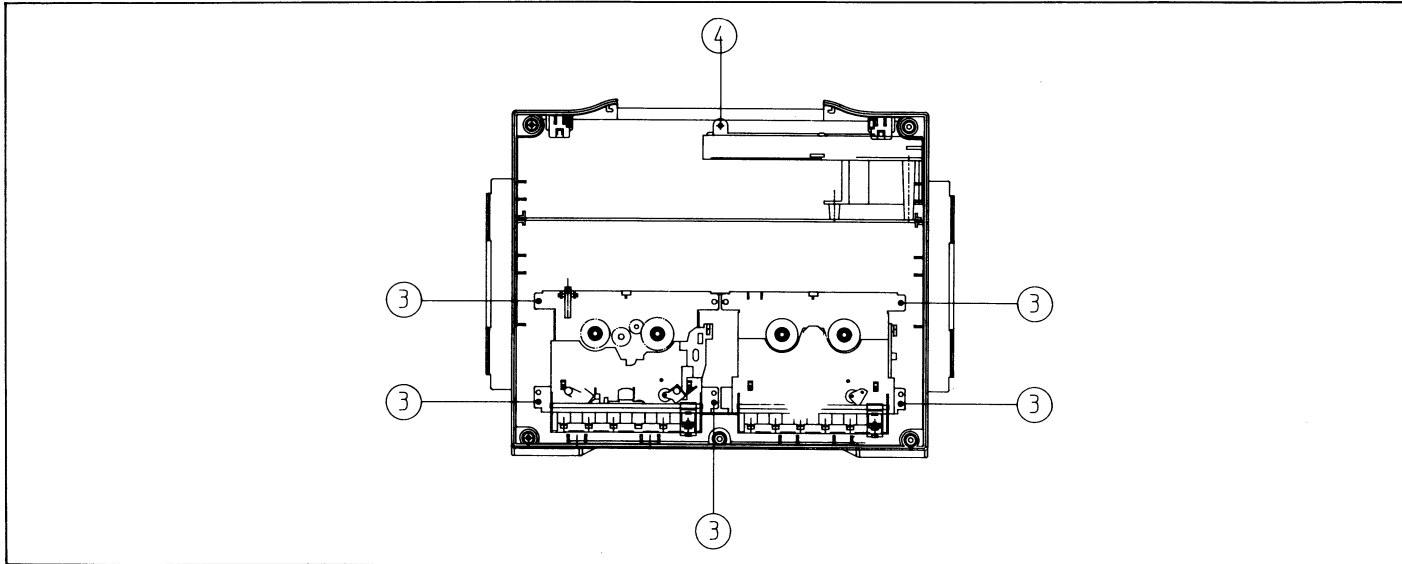
- 1) Remove the 6 screws ①
- 2) Separate Front & Back cabinet.

2. MAIN PCB ASSY

- 1) Remove the 1 screw ④ and 2 screws ② (page 6).
- 2) disconnect connecting wires LEAD FASTEN, UCW901, RCW701 and take out.

3. DECK

- 1) Remove the 5 screws ③.
- 2) disconnect connecting wires (CCW801, JCW301, KCW401) and take out.
- 3) Remove deck from the BACK cabinet.

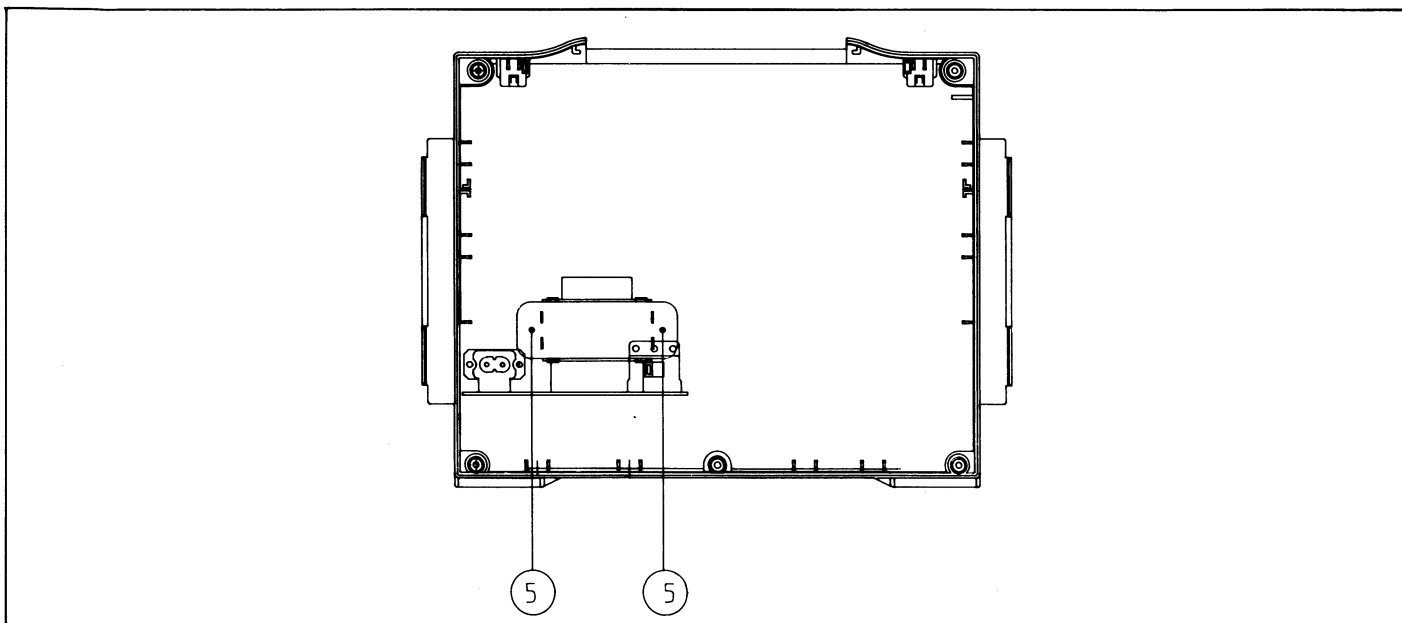


4. POWER PCB

- 1) Remove the 2 screws ⑤
- 2) Remove power PCB from the back cabinet.

5. CD PACK ASSY

- 1) Remove the 2 screws ⑦.
- 2) Remove CD pack ASSY.

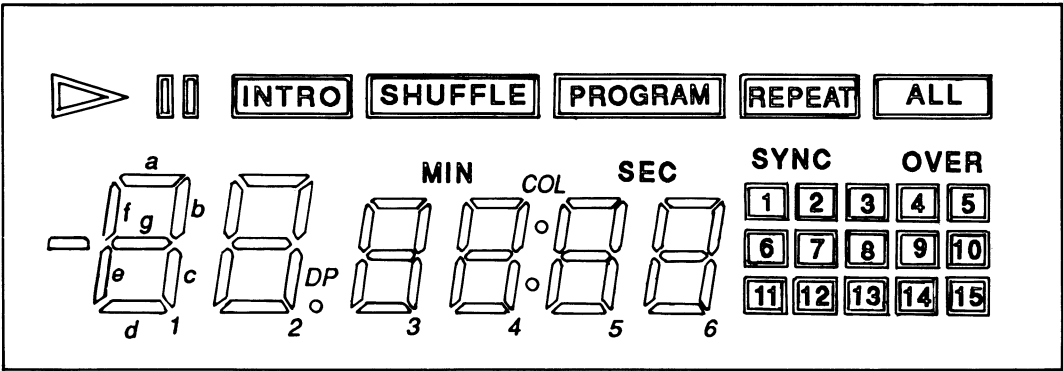


DESCRIPTION OF LCD SEGMENTS

If one or all of the LCD Segments (see segment diagram below) don't work, check if IC7530 and LCD pins are properly connected refering to the chart below.

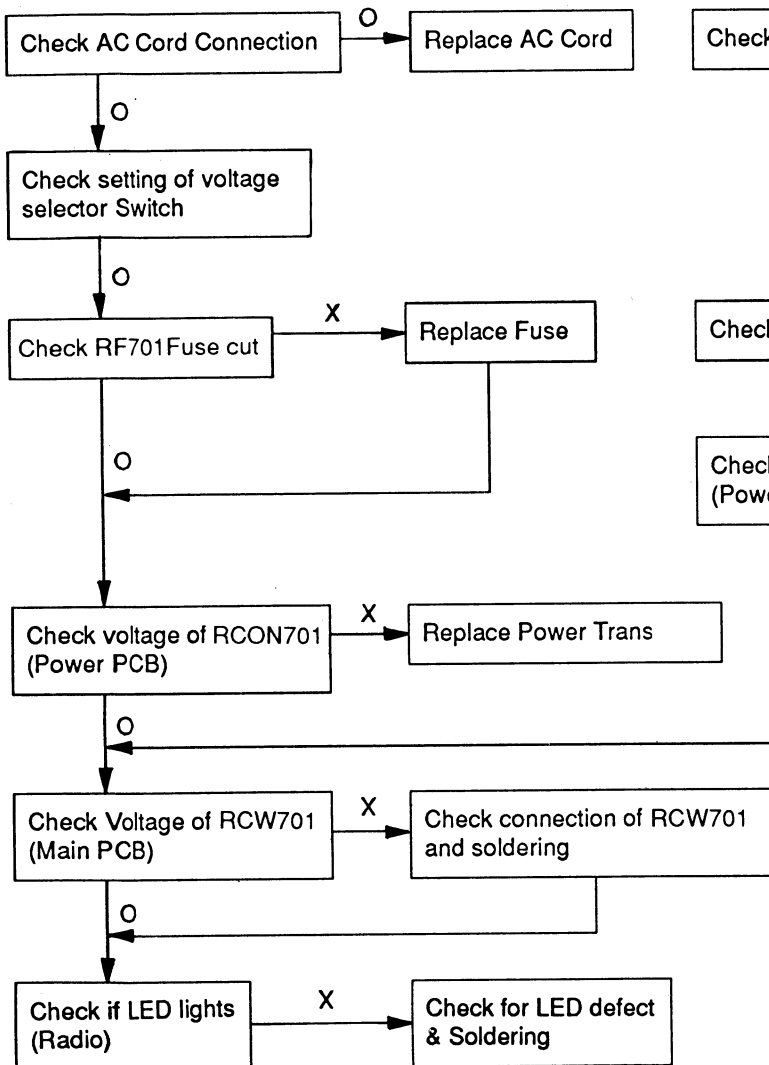
No	1	2	3	4	5	6	7	8	9	10	11	12	13	14
COM1	COM			INTRO		1a		SHUFFLE	2a	DP	PROGRAM	3a	MIN	REPEAT
COM2		COM			1f	1g	1b	2f	2g	2b	3f	3g	3b	4f
COM3			COM		1e	1d	1c	2e	2d	2c	3e	3d	3c	4e

No	15	16	17	18	19	20	21	22	23	24	25	26	27	28
COM1	4a	COL	ALL	5a	SEC	SYNC	6a	OVER	1	2	3	4	5	
COM2	4g	4b	5f	5g	5b	6f	6g	6b	6	7	8	9	10	
COM3	4d	4c	5e	5d	5c	6e	6d	6c	11	12	13	14	15	

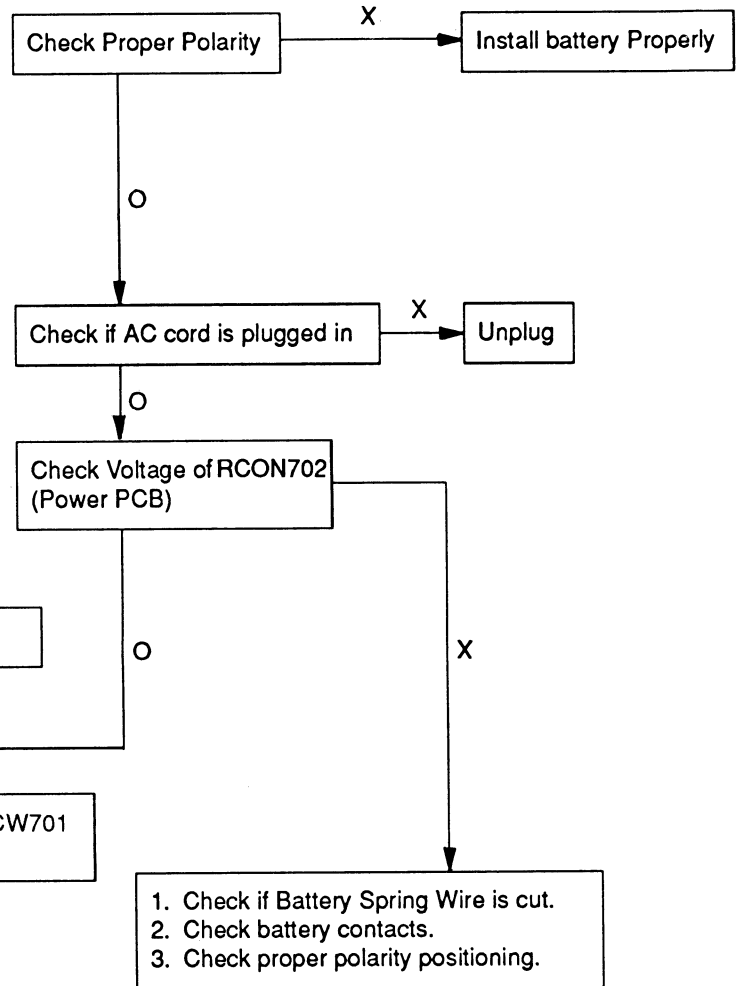


TROUBLESHOOTING CHART (RADIO CASSETTE)

1. AC POWER INSENSIBLE

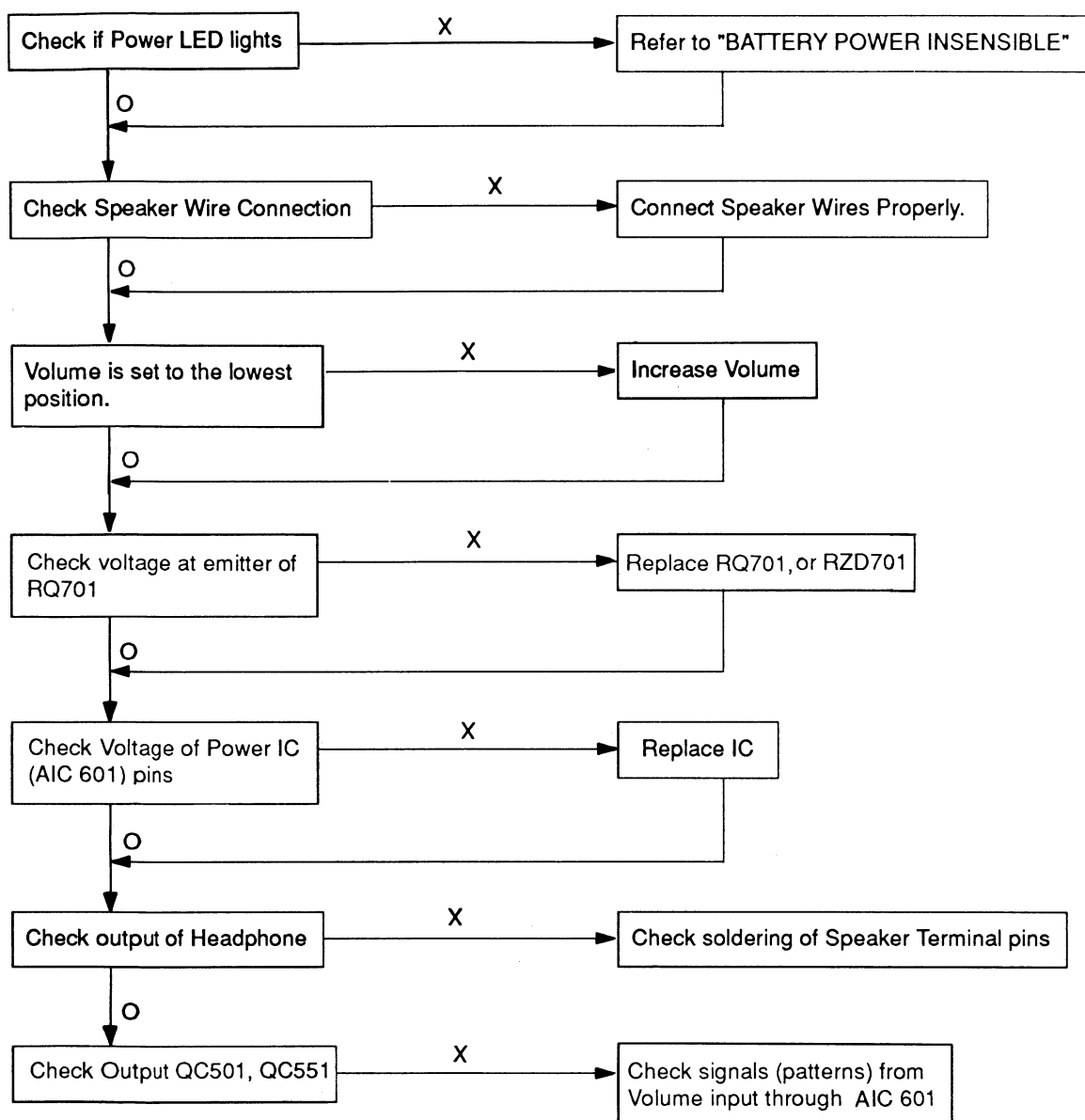


2. BATTERY POWER INSENSIBLE

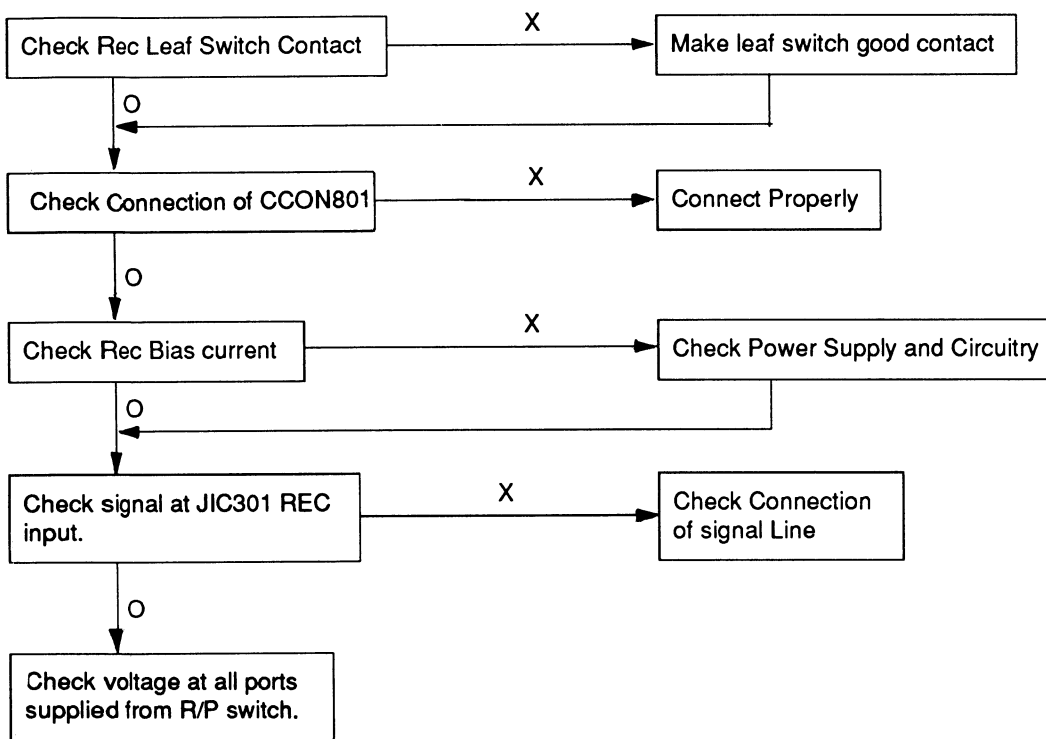


Note : O denotes YES, NORMAL or OK
X denotes NO, Abnormal

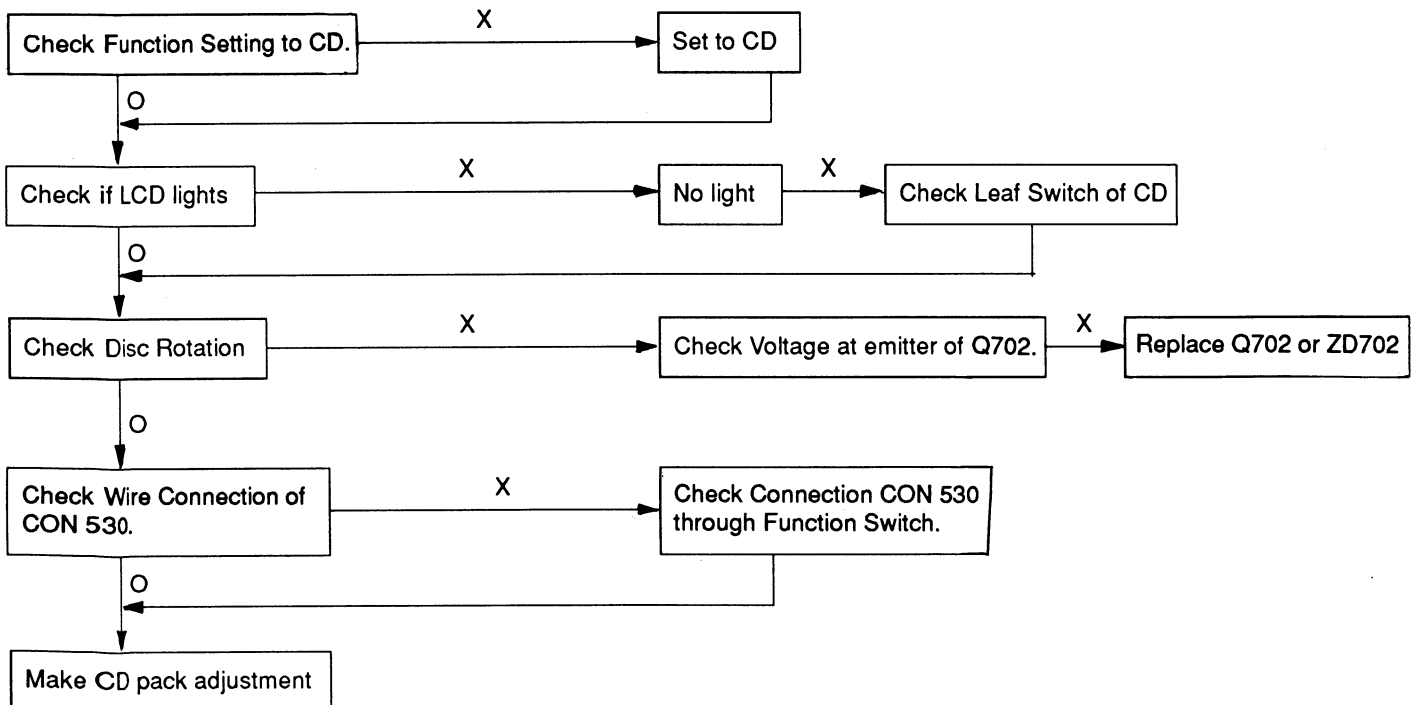
3. NO OUTPUT



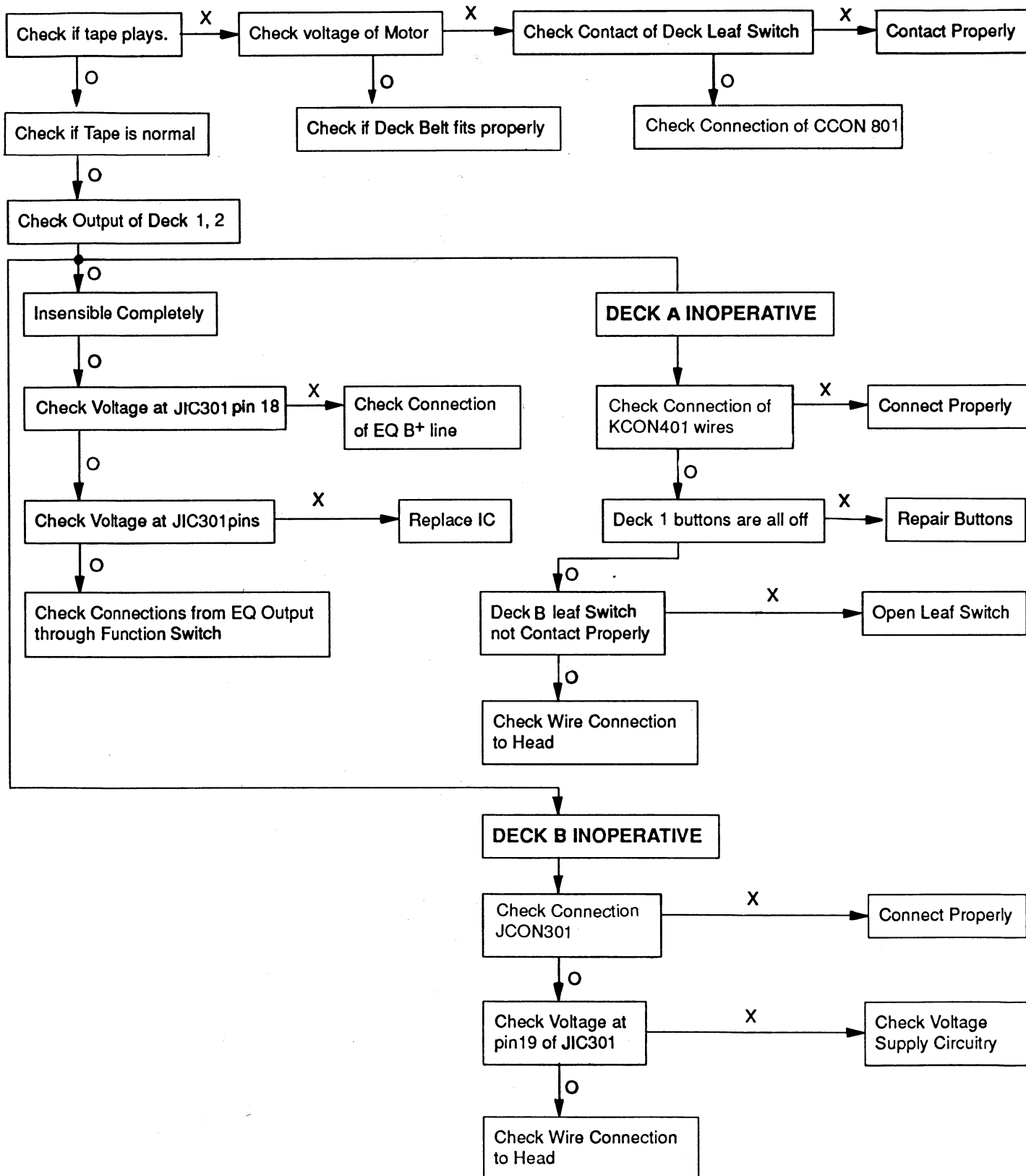
4) RECORDING NOT WORKING



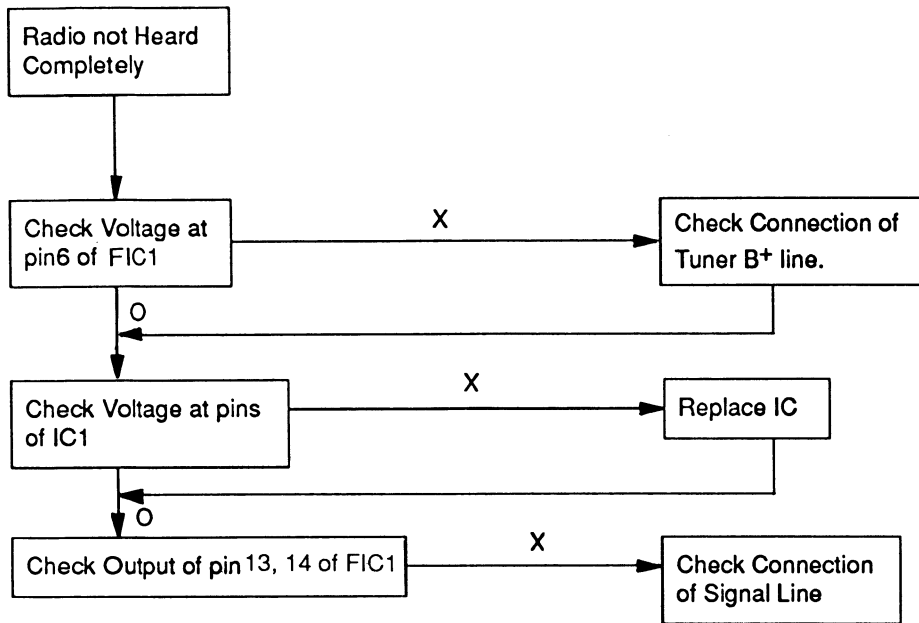
5) COMPACT DISC INOPERATIVE



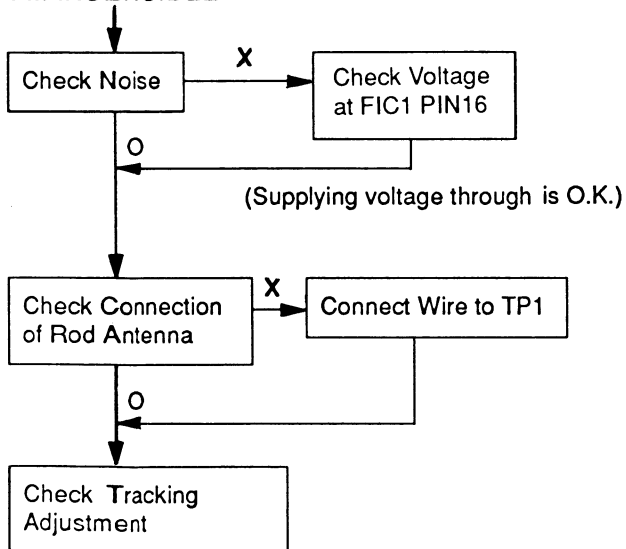
6. TAPE NOT WORKING



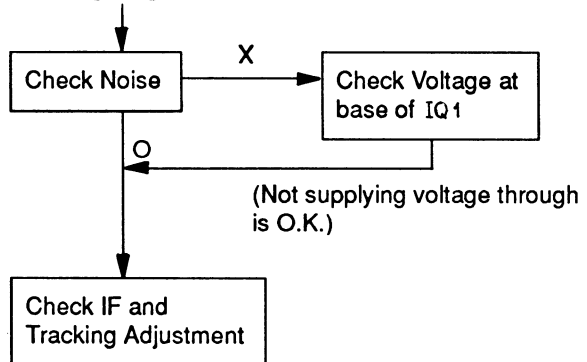
7. RADIO INSENSIBLE



FM INSENSIBLE



AM INSENSIBLE



■ ADJUSTMENT INSTRUCTION

ADJUSTMENT PROCEDURE

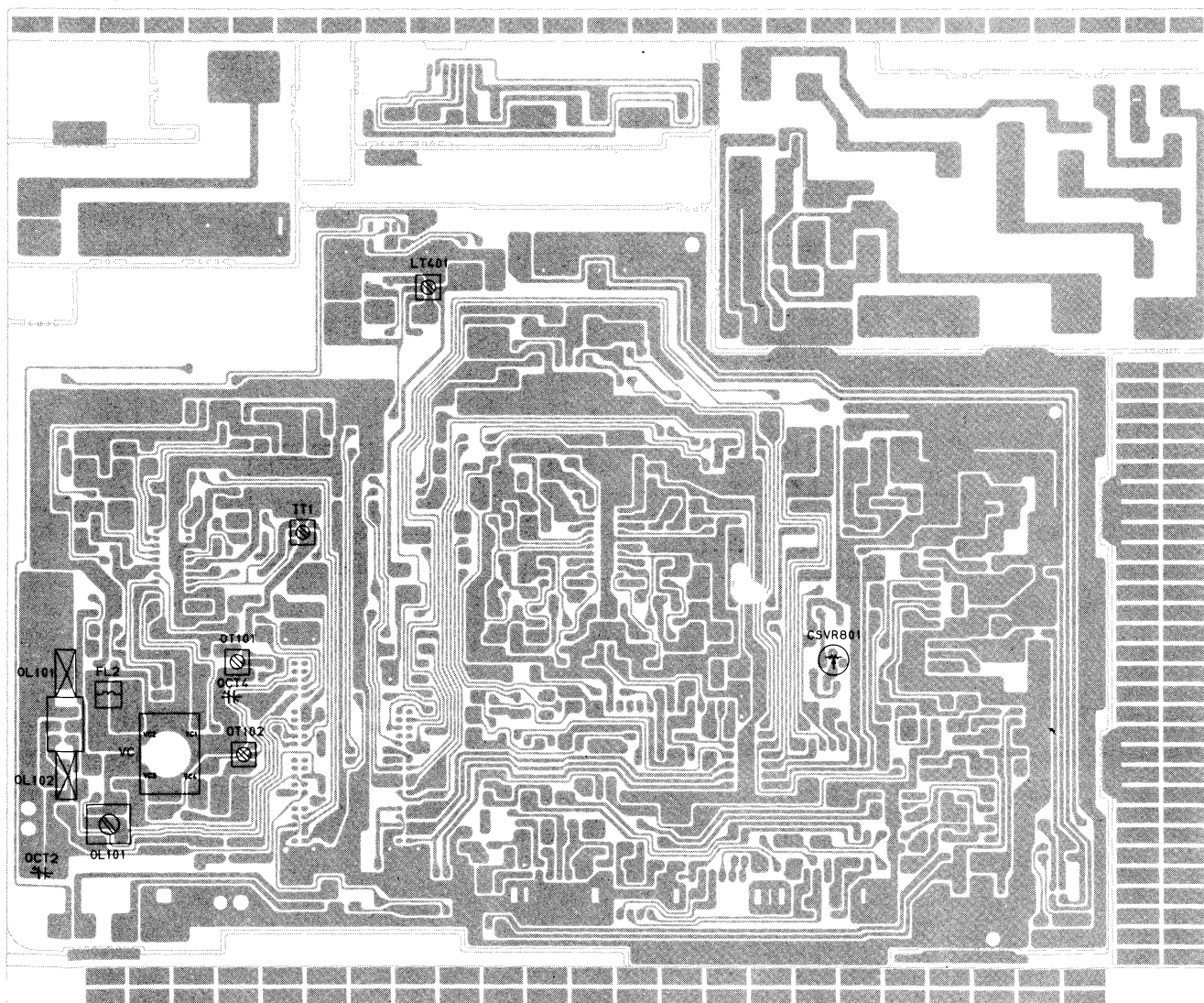
INSTRUMENTS AND TOOLS

1. AM STANDARD SIGNAL GENERATOR
2. FM STANDARD SIGNAL GENERATOR
3. FM/AM IF GENERATOR: 10.7MHZ, 455KHZ (465KHZ)
4. OSCILLOSCOPE
5. OUTPUT METER: LEVEL METER OR AC VOLTMETER.
6. LOOP ANTENNA
7. DUMMY LOAD (4 ohm)
8. SW DUMMY ANT.
9. FREQUENCY COUNTER
10. FM STEREO MODULATOR

IMPORTANT

1. Check the power source voltage.
2. Select desired Band and Function.
3. Set Tone Control at mid position.
4. Modulate AM to 30% amplitude with 400Hz signal and FM to 22.5MHz deviation with 400Hz signal.
5. Set volume Control to approximately 50mW (4 ohm)

● LOCATION OF ADJUSTMENT POINT (AUDIO SECTION) MAIN PCB (PARTS SIDE)



■ ADJUSTMENT

1. FM ADJUSTMENT

ITEM	CONNECTION	STEP	S.S.G Frequency	RADIO DIAL SETTING	Adjustment Point	REMARK
Frequency coverage	Fig. 2	1	87.3MHz	Tune to the Lowest frequency	FL2 FM OSC coil	Best resonating point of SSG.
		2	108.3MHz	Tune to the highest frequency	VC1 OSC trimmer (VARICON)	Best resonating point of SSG.
		3	Repeat steps 3 and 4 several times.			
Tracking	Fig. 2	4	90MHz	90MHz	Not required	
		5	106MHz	106MHz	VCT2 ANT trimmer (VARICON)	Maximum Output
		6	Repeat steps 6 and 7 to obtain suitable sensitivity at 90MHz and 106MHz.			

FM OUTPUT : FIC1 (KA2293) PIN NO. 13, 14

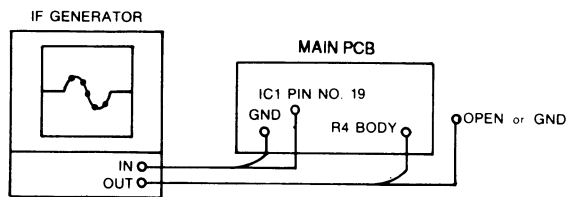


Fig. 1

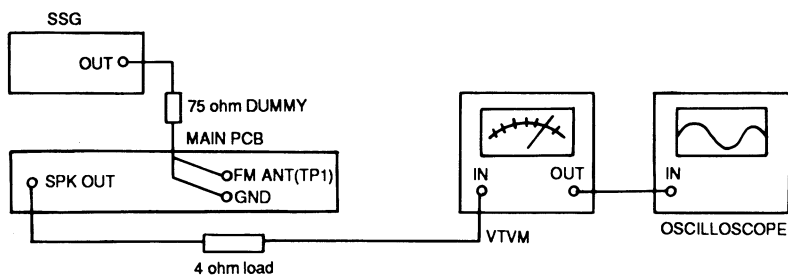


Fig. 2

2. 2 BAND (FM/AM) AM ADJUSTMENT

ITEM	CONNECTION	STEP	S.S.G Frequency	RADIO DIAL SETTING	Adjustment Point	REMARK
IF	Connect FM/AM IF generator to loop ANT Couple the AM ANT coil close to loop ANT and take out the signal from AM IF out point (IC1 pin No 19) (See Fig. 3)	1	455KHz (465KHz)	Lowest frequency	AM IFT IT1 (WHT)	Maximum output and best "V" curve
		2	Repeat 1 until no further improvement can be made.			
AM coverage	Fig. 4	3	515KHz	Lowest frequency	AM OSC coil (RED) OT101	Best resonating point of SSG
		4	1680KHz	highest frequency	AM OSC trimmer VC3 (VARICON)	Best resonating point of SSG
		5	Repeat steps 3 and 4 several times			
AM tracking	Fig. 4	6	600KHz	600KHz	AM ANT coil OL101	Maximum output
		7	1400KHz	1400KHz	AM ANT trimmer (VCT4) (VARICON)	Maximum output
		8	Repeat steps 6 and 7 to obtain suitable sensitivity at 600KHz and 1400KHz.			

AM IF OUTPUT : FIC1 (KA2293) PIN NO. 19.

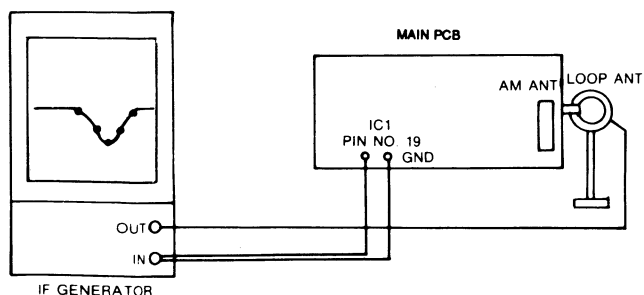


FIG. 3

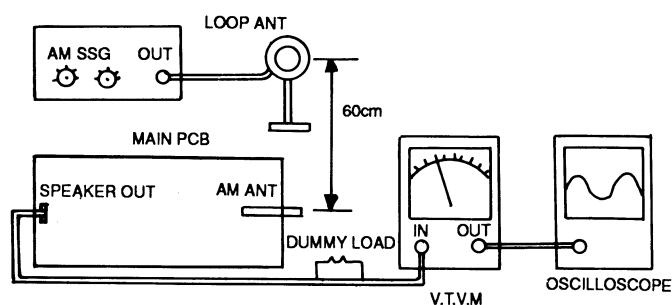


FIG. 4

3. 3 BAND (FM/SW/AM) AM/SW ADJUSTMENTS

ITEM	CONNECTION	STEP	S.S.G Frequency	RADIO DIAL SETTING	Adjustment Point	REMARK
IF	IF is the same as 2 band's					
AM coverage	Fig. 4	1	515KHz	Lowest frequency	AM OSC coil (red) OT101	Best resonating point of SSG
		2	1680KHz	highest frequency	AM OSC trimmer OCT4	Best resonating point of SSG.
		3	Repeat steps 1 and 2 several times			
AM tracking	Fig. 4	4	600KHz	600KHz	AM ANT COIL OL102	Maximum output
		5	1400KHz	1400KHz	AM ANT trimmer VC4 (VARICON)	Maximum output
		6	Repeat steps 4 and 5 to obtain suitable sensitivity at 600KHz and 1400KHz.			
SW frequency coverage	Connect AM(SW) signal generator to SW ANT terminal (TP1) thru SW dummy ANT and speaker output to VTVM across 4 ohm load. (see Fig. 5 Fig. 6)	7	5.7MHz	Lowest frequency	SW OSC COIL OT102	Best resonating point of SSG
		8	18.5MHz	highest frequency	SW OSC trimmer VC3 (VARICON)	Best resonating point of SSG.
		9	Repeat steps 7 and 8 several times			
SW tracking	Fig. 5, Fig. 6	10	7MHz	7MHz	SW ANT coil OL101	Maximum output
		11	15MHz	15MHz	NO ADJUSTMENTS	
		12	Repeat steps 10 and 11 to obtain suitable sensitivity at 7MHz and 15MHz.			

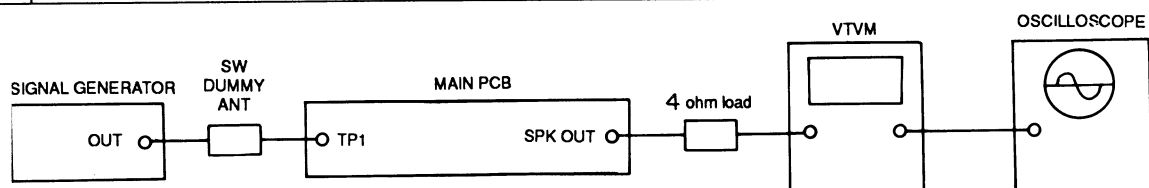


FIG. 5 SW FREQUENCY COVERAGE, TRACKING ADJUSTMENT

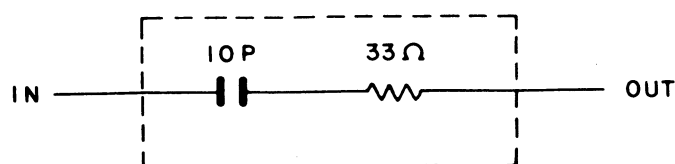


FIG. 6 SW DUMMY ANT

4. 3 BAND (FM/MW/LW) MW(AM)/LW ADJUSTMENTS

ITEM	CONNECTION	STEP	S.S.G Frequency	RADIO DIAL SETTING	Adjustment Point	REMARK
IF	IF is the same as 2 band's					
MW(AM) frequency coverage	Fig. 4	1	515KHz	lowest frequency	MW OSC coil OT102 (red)	Best resonating point of SSG
		2	1680KHz	highest frequency	MW OSC trimmer VC3 (VARICON)	Best resonating point of SSG.
		3	Repeat steps 1 and 2 several times			
MW(AM) tracking	Same as 2 band's (see Fig. 4)	4	600KHz	600KHz	MW ANT coil OL101	Maximum output
		5	1400KHz	1400KHz	MW ANT trimmer VCT4 (VARICON)	Maximum output
		6	Repeat steps 4 and 5 to obtain suitable sensitivity at 600KHz and 1400KHz.			
LW frequency coverage	Fig. 4	7	145KHz	lowest frequency	LW OSC coil OT101	Best resonating point of SSG
		8	295KHz	highest frequency	LW OSC trimmer OCT4	Best resonating point of SSG.
		9	Repeat steps 7 and 8 several times			
LW tracking	Fig. 4	10	170KHz	170KHz	LW ANT coil OL102	Maximum output
		11	250KHz	250KHz	LW ANT trimmer OCT2	Maximum output
		12	Repeat steps 10 and 11 to obtain suitable sensitivity at 170KHz and 250KHz.			

5. TAPE SECTION

1. RECORDING BIAS ADJUSTMENT

- Connect frequency counter to LC403 (See Fig 7) and press the Record button.
- Adjust LT401 (BIAS OSC COIL) until frequency counter reads 50KHz on stereo FM mode.

2. TAPE AZIMUTH ADJUSTMENT

- Connect the equipments as per Fig. 8 to adjust the tape azimuth with test tape (recorded at 8KHz MTT-113CN).
- Play the test tape after inserting in DECK A.
- Adjust the azimuth adjustment screw of left side of record/play head for maximum output and for the same channel phase. (see Fig. 9)
- Repeat steps a – c at DECK B position.
- After adjustment, be sure to lock the adjusting screws.

3. TAPE SPEED ADJUSTMENT

- Connect the equipments as Fig. 8 to adjust the tape speed with test tape [recorded at 3KHz, MTT-111N].
- Normal speed
 - Set function Selector to "NORMAL" and press PLAY.
 - Adjust the semi-fixed resistor (CSVR801) so that the frequency counter reads 3KHz.
- High speed
 - Insert a test tape into DECK B and set the FUNCTION selector to "HIGH" position.
 - Press Record (deck A) and PLAY (deck B).
Then the speed of "HIGH" position is fixed approximately 5400Hz-6600Hz.

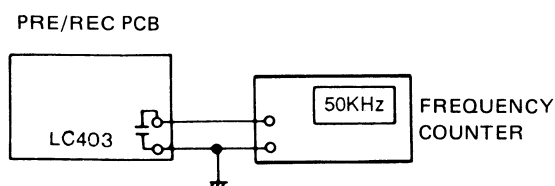


FIG. 7 RECORDING BIAS ADJUSTMENT

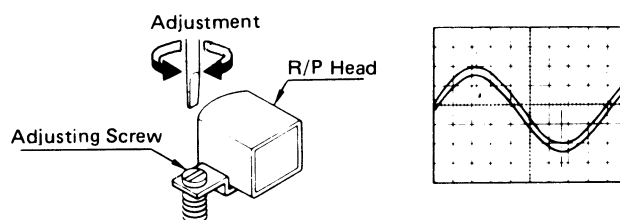


FIG. 9 AZIMUTH ADJUSTMENT

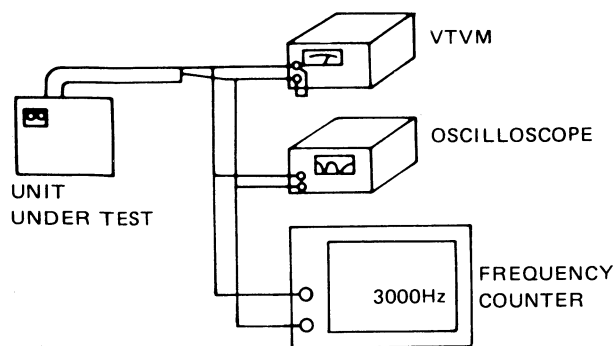


FIG. 8 AZIMUTH. SPEED ADJUSTMENT

CD SECTION

1) CLV ADJUSTMENT

10 : 1 damping probe.

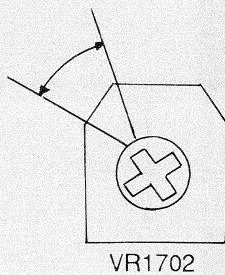
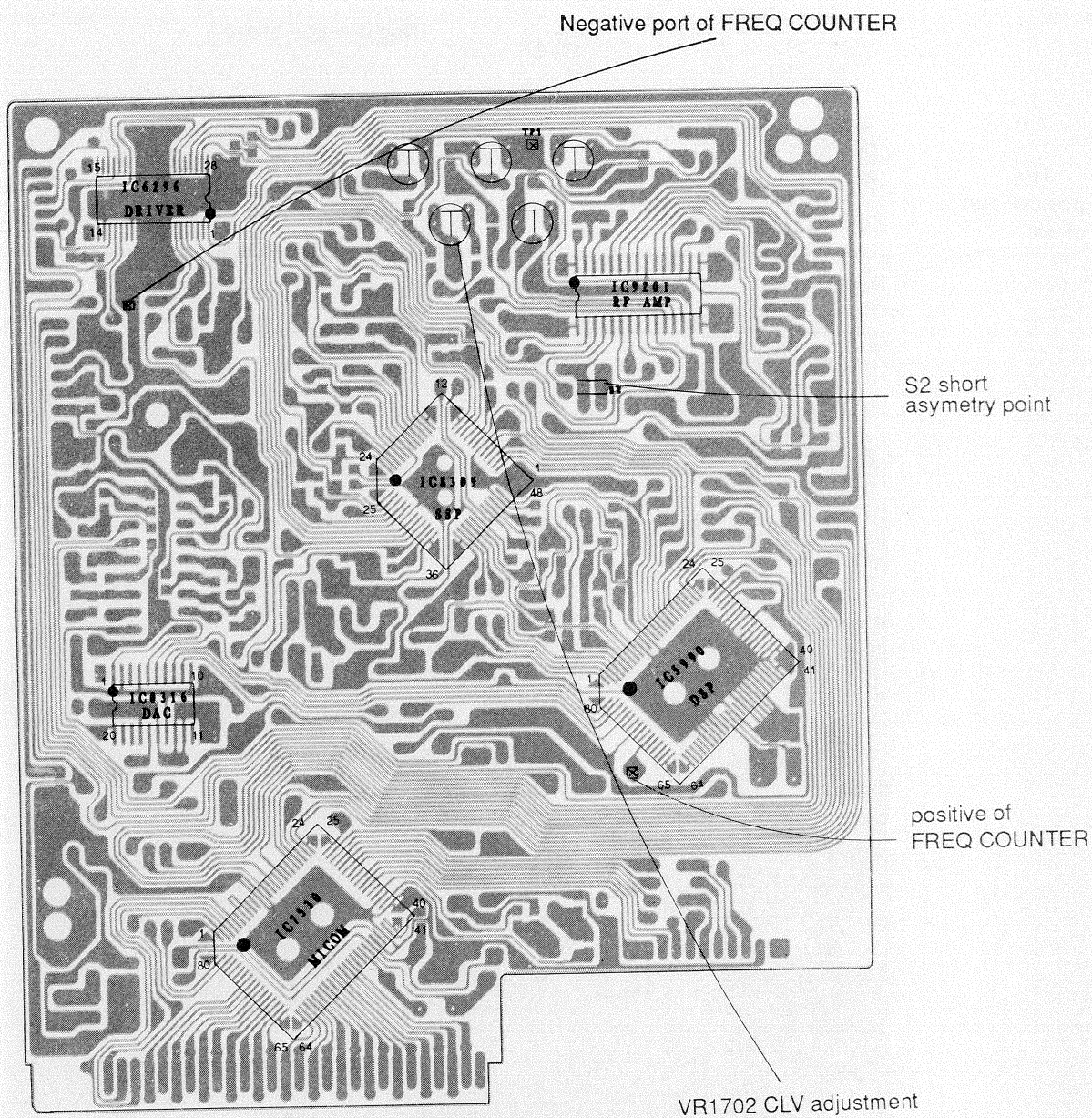
A. Turn power on without loading a disc.

B. Connect S2 (Asymetry ; short)

C. Connect TP5 to GND and TP2 to positive terminal on the Frequency Counter.

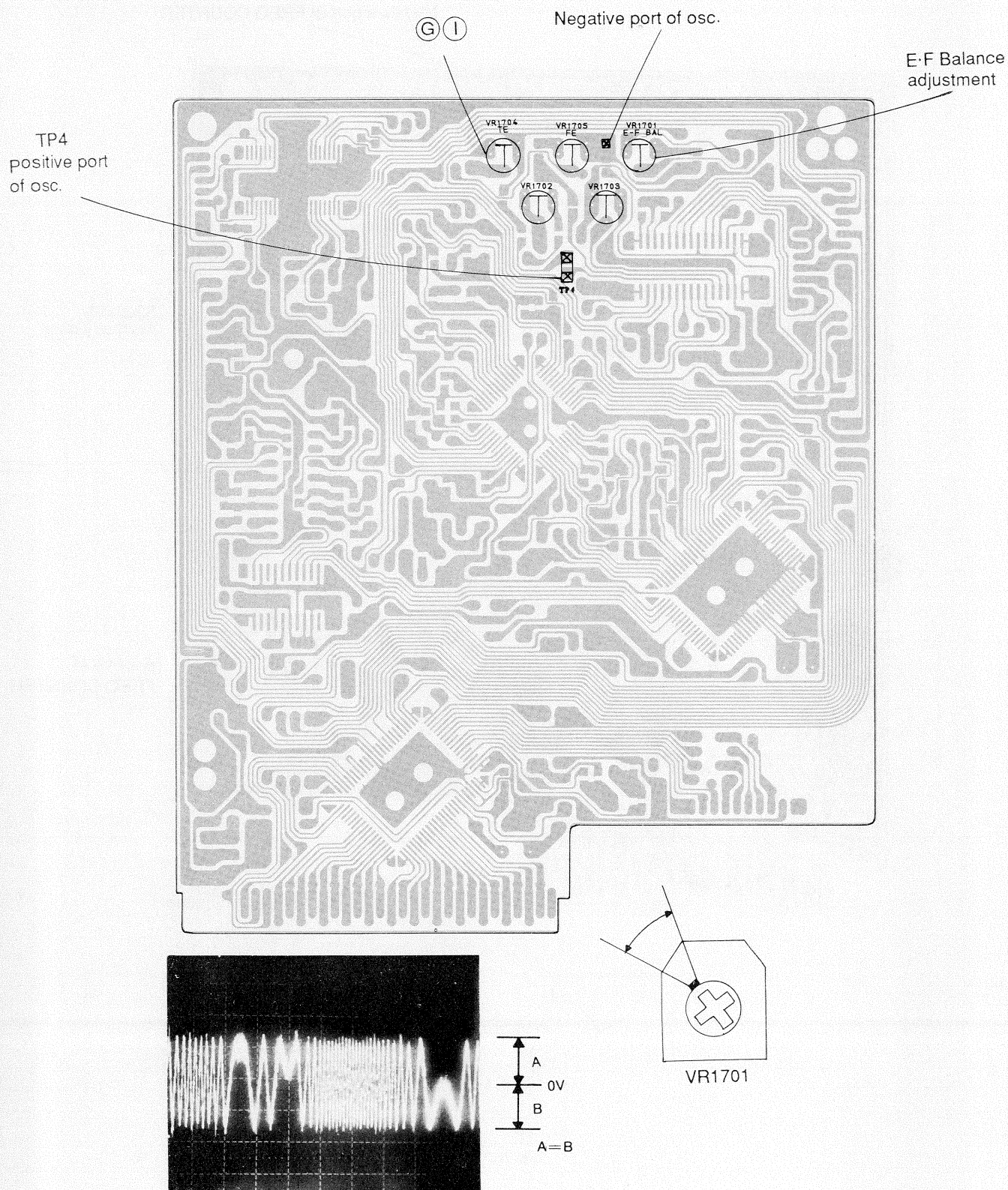
D. Adjust VR 1702 so that the Frequency Counter reads $4.28\text{MHz} \pm (0.01\text{MHz})$

E. Disconnect S2.



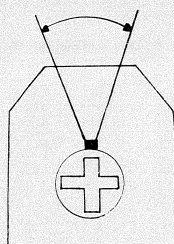
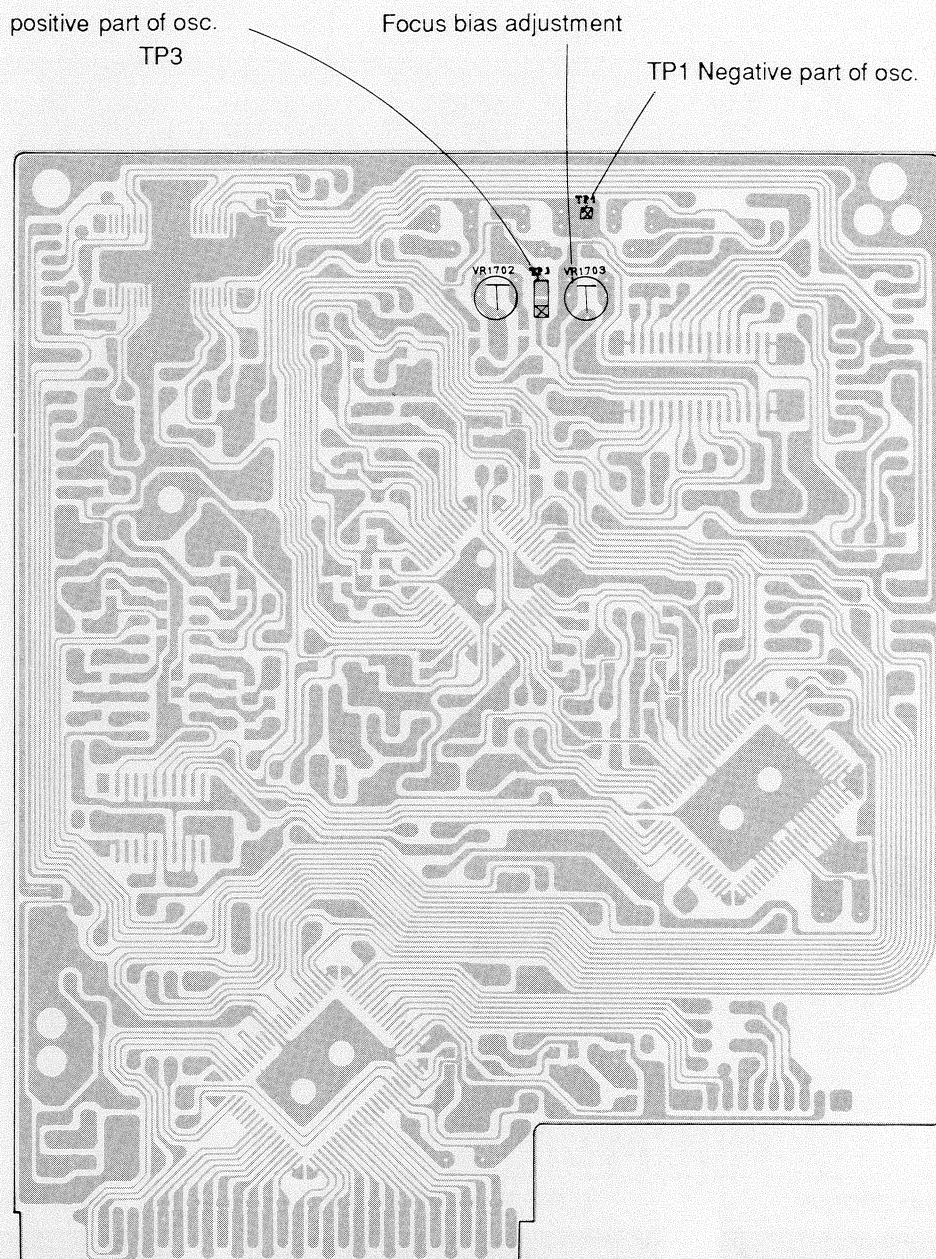
2) EF BALANCE ADJUSTMENT (Power On)

- Set Oscilloscope Time/Div to 2mS.
- Set Oscilloscope Volt/Div to 0.5V.
- Connect TP1 (Vref) to GND and TP4 (T.E) to positive terminal on the oscilloscope.
- Press PLAY with loading a disc.
- Adjust VR1704 all the way counter clockwise. (Intermittent Sound)
- Adjust VR1701 so that the waveform is equally symmetrical above and below (A = B) the Center .
- Adjust VR1704 so that Sound comes out normally (Nearly mid-position of VR1704).



3) FOCUS BIAS ADJUSTMENT

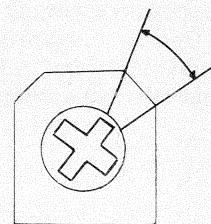
- A. Turn power on without loading a disc.
- B. Set Oscilloscope Vol/Div to DC200mV.
- C. Connect TP1 (Vref) to GND and TP3 (F.E) to positive terminal on the oscilloscope.
- D. Adjust VR1703 so that the voltage is 0 mV DC on the oscilloscope.



VR1703

4) TRACKING GAIN ADJUSTMENT (Power On)

- Connect TP1 (Vref) to GND and TP6 (T.E) to positive terminal on the oscilloscope.
- Press PLAY with loading a disc.
- Adjust VR 1704 so that Waveform is as shown in the figure below.

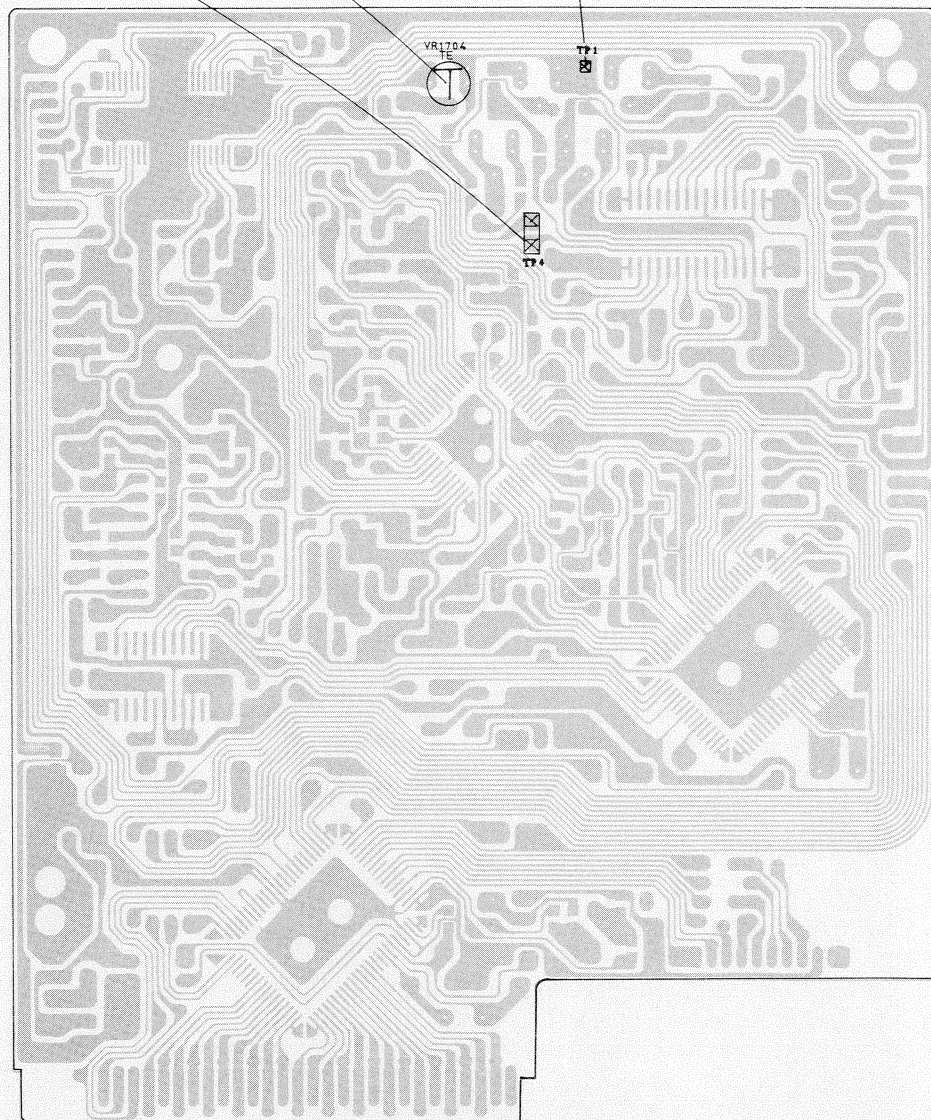


VR1704

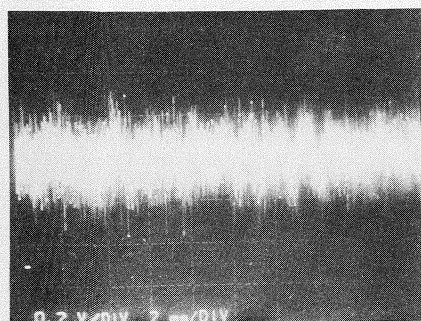
TP4 positive port of osc.

Tracking gain adjustment

TP1 Negative port of osc

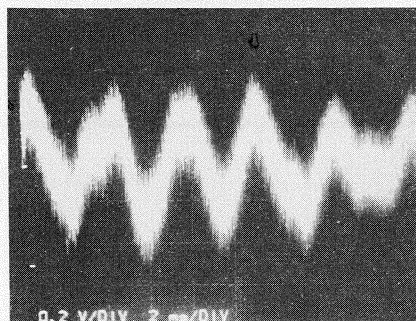


(NORMAL WAVEFORM)



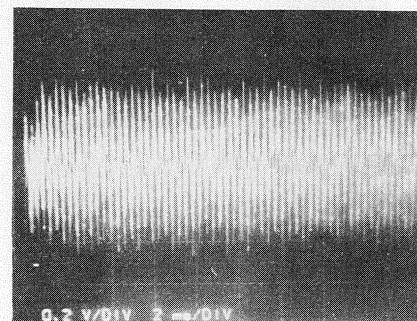
VOLT/DIV : 0.2V
TIME/DIV : 2mS

(LOW TRACKING GAIN)



VOLT/DIV : 0.2V
TIME/DIV : 2mS

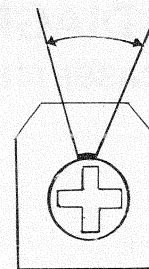
(HIGH TRACKING GAIN)



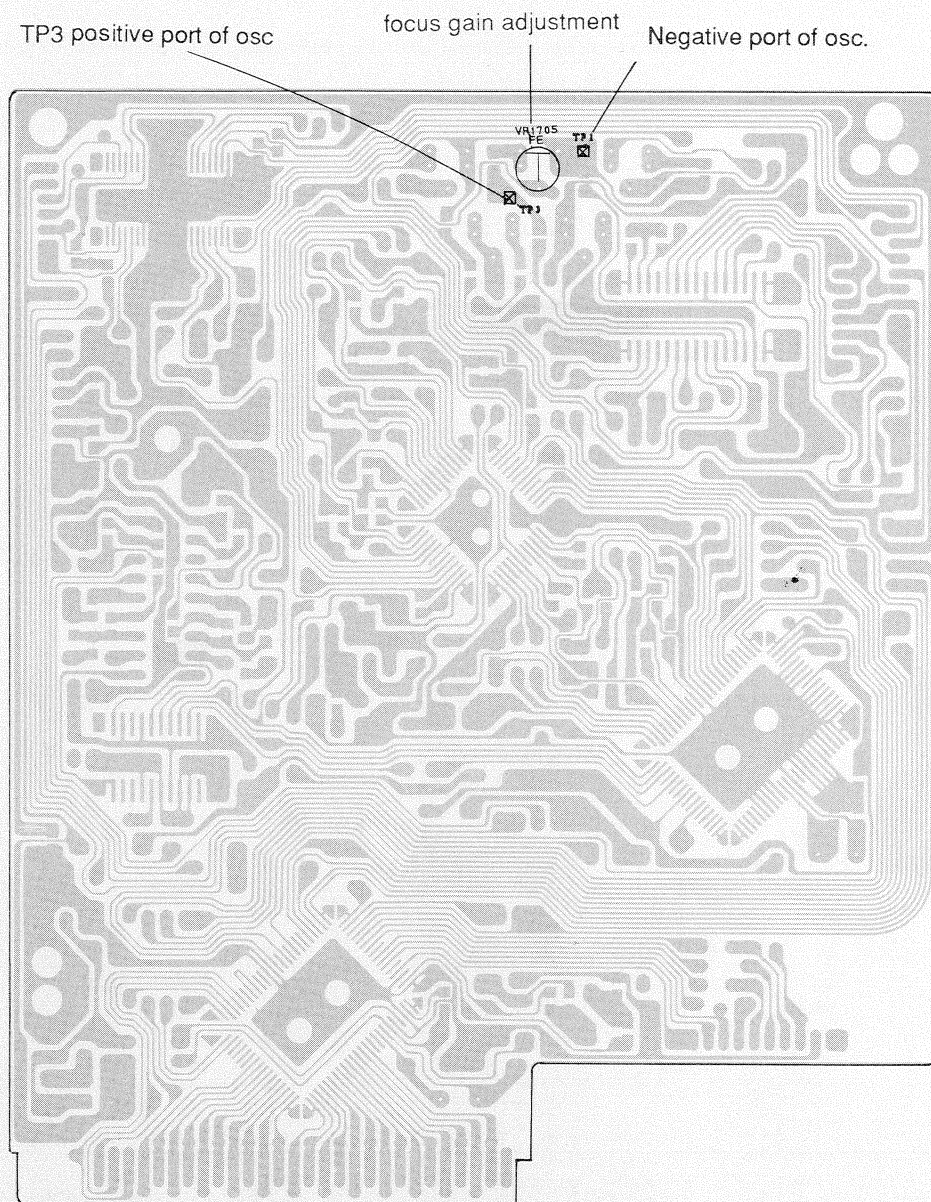
VOLT/DIV : 0.2V
TIME/DIV : 2mS

5) FOCUS GAIN ADJUSTMENT (Power ON)

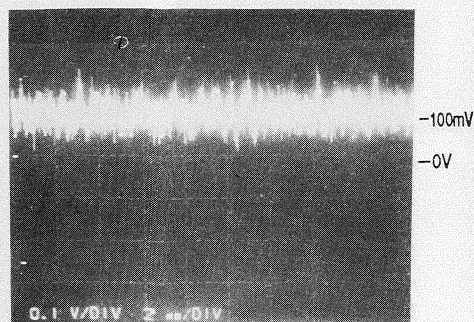
- Connect TP1 (Vref) to GND and TP7(F.E)to positive terminal on the oscilloscope.
- Press PLAY with loading a disc.
- Adjust VR 1705 so that the waveform is as shown in the figure below.



VR1705

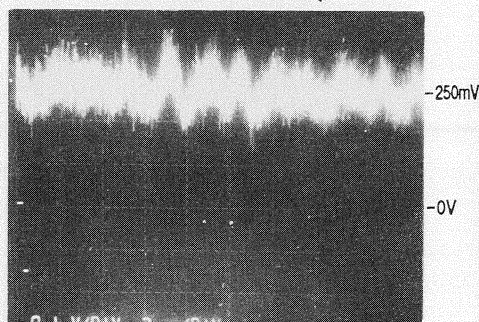


(NORMAL WAVEFORM)



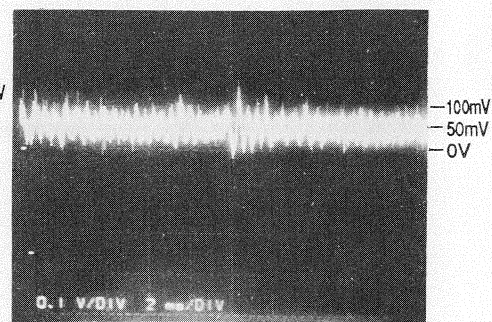
VOLT/DIV : 0.1V
TIME/DIV : 2mS

(LOW FOCUS GAIN)



VOLT/DIV : 0.1V
TIME/DIV : 2mS

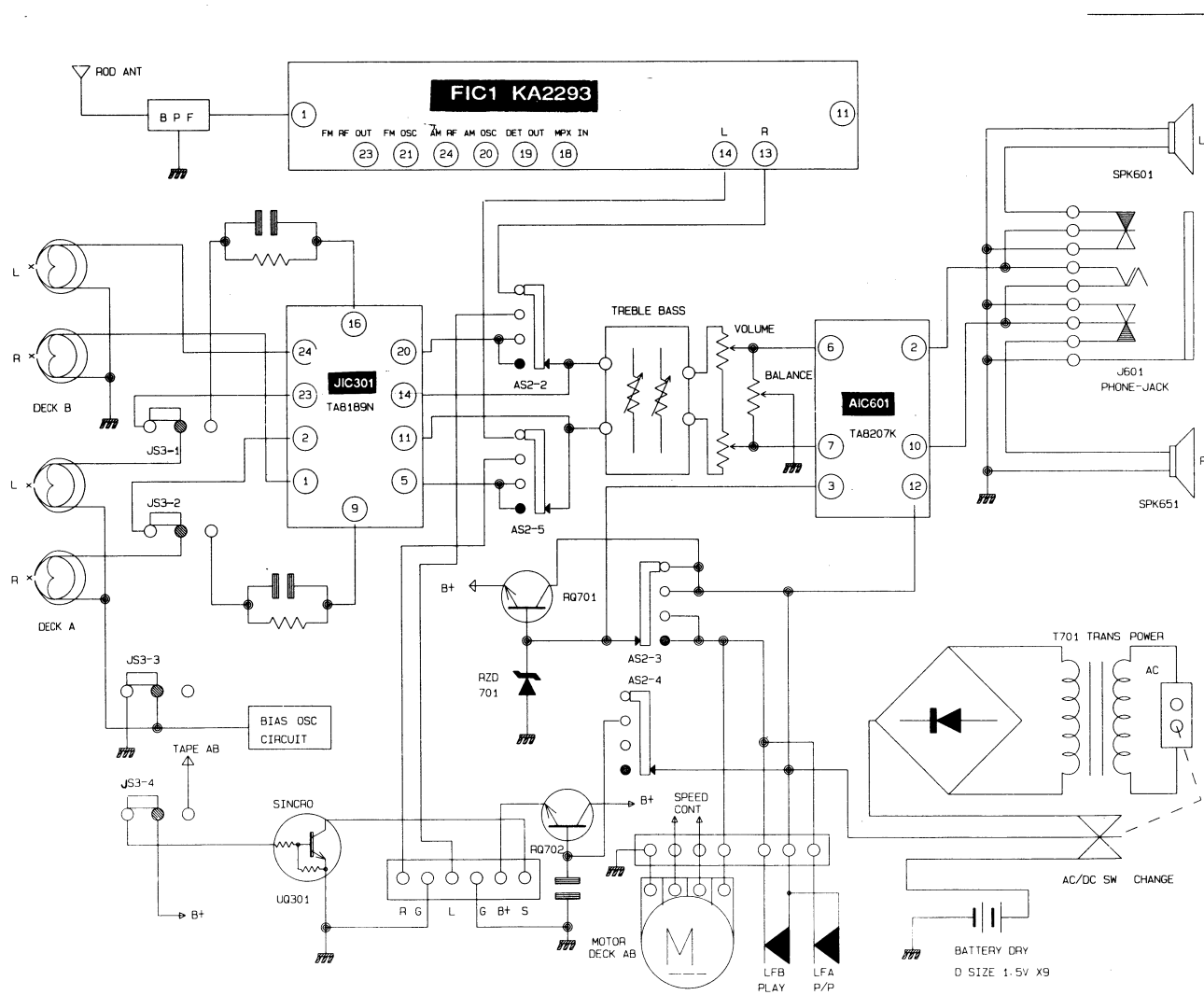
(HIGH FOCUS GAIN)



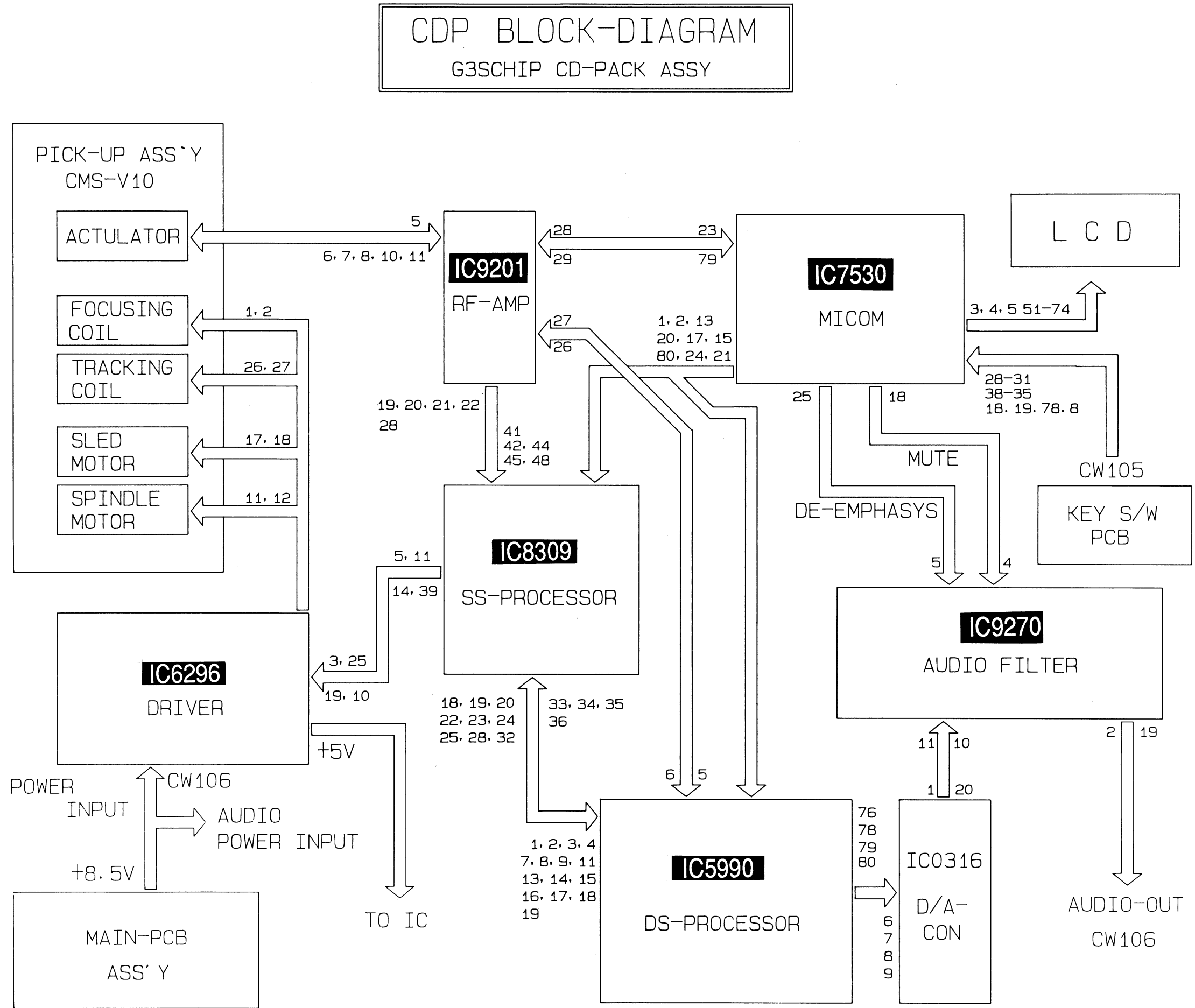
VOLT/DIV : 0.1V
TIME/DIV : 2mS

BLOCK DIAGRAM

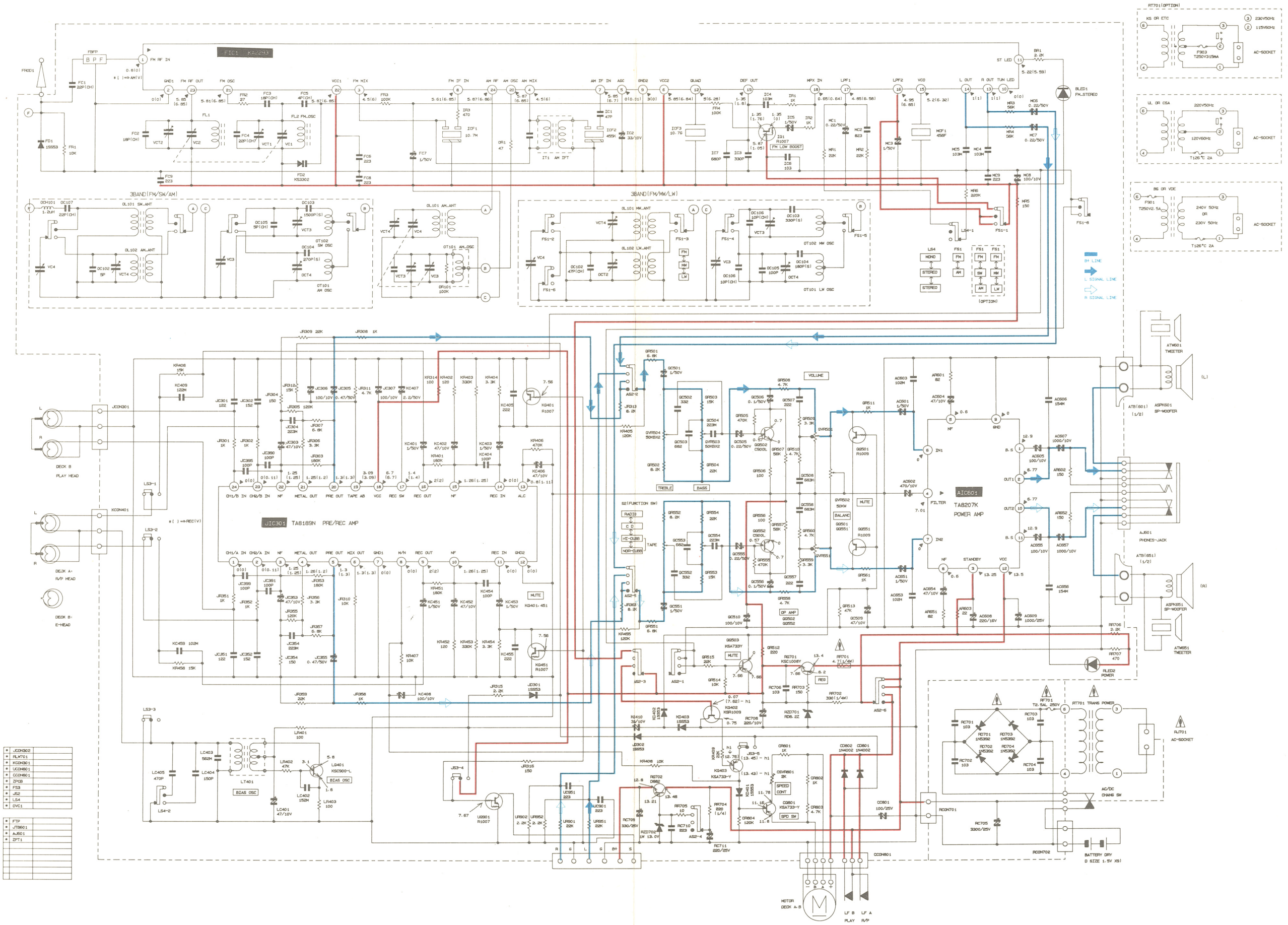
1. RADIO CASSETTE SECTION



2. CD SECTION



SCHEMATIC DIAGRAM



2. CD SECTION

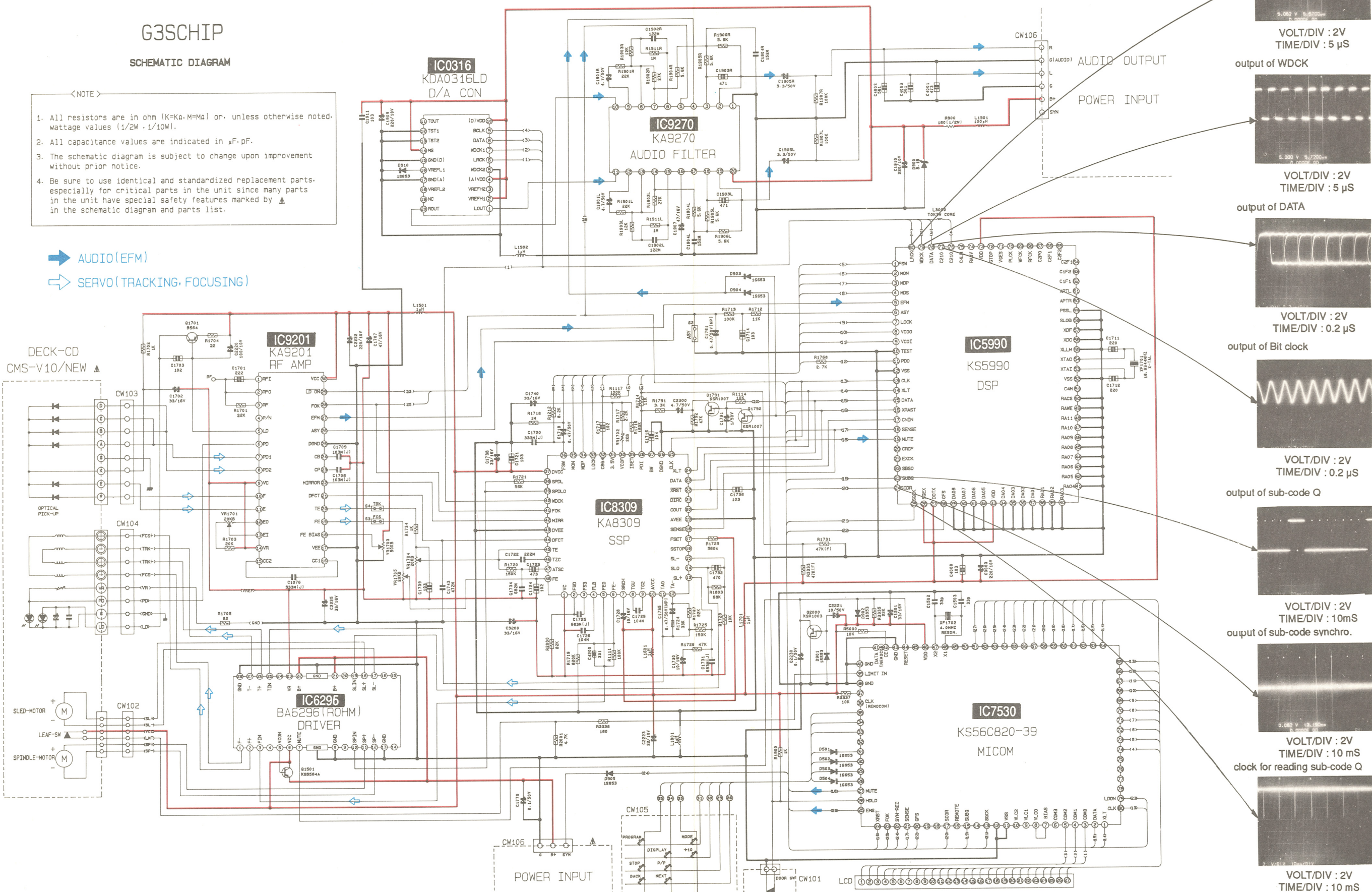
G3SCHIP

SCHEMATIC DIAGRAM

- (NOTE)
1. All resistors are in ohm (K = K ohm, M = M ohm) or, unless otherwise noted, wattage values (1/2W, 1/10W).
 2. All capacitance values are indicated in μF , pF.
 3. The schematic diagram is subject to change upon improvement without prior notice.
 4. Be sure to use identical and standardized replacement parts, especially for critical parts in the unit since many parts in the unit have special safety features marked by Δ in the schematic diagram and parts list.

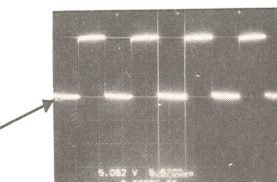
→ AUDIO (EFM)

→ SERVO (TRACKING, FOCUSING)



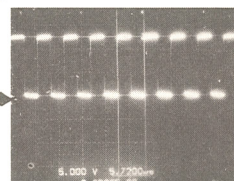
1. All resistors are in ohm (K = K ohm, M = M ohm) of, unless otherwise noted, wattage values (1/4, 1/8W).
2. All capacitance values are indicated in μF , pF.
3. The schematic diagram is subject to change upon improvement without prior notice.
4. Be sure to use identical and standardized replacement parts, especially for critical parts in the unit since many part in the unit have special safety features marked by Δ in the schematic diagram and parts list.

output of LRCK



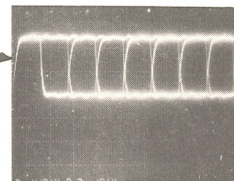
VOLT/DIV : 2V
TIME/DIV : 5 μs

output of WDCK



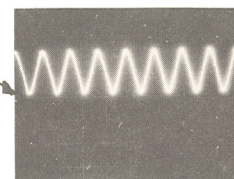
VOLT/DIV : 2V
TIME/DIV : 5 μs

output of DATA



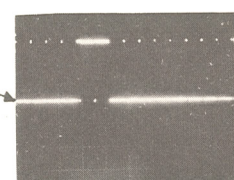
VOLT/DIV : 2V
TIME/DIV : 0.2 μs

output of Bit clock



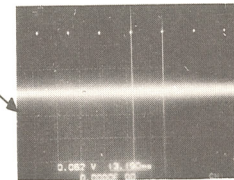
VOLT/DIV : 2V
TIME/DIV : 0.2 μs

output of sub-code Q



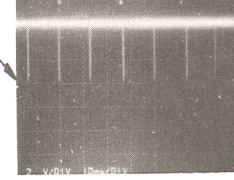
VOLT/DIV : 2V
TIME/DIV : 10mS

output of sub-code synchro.



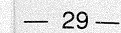
VOLT/DIV : 2V
TIME/DIV : 10mS

clock for reading sub-code Q

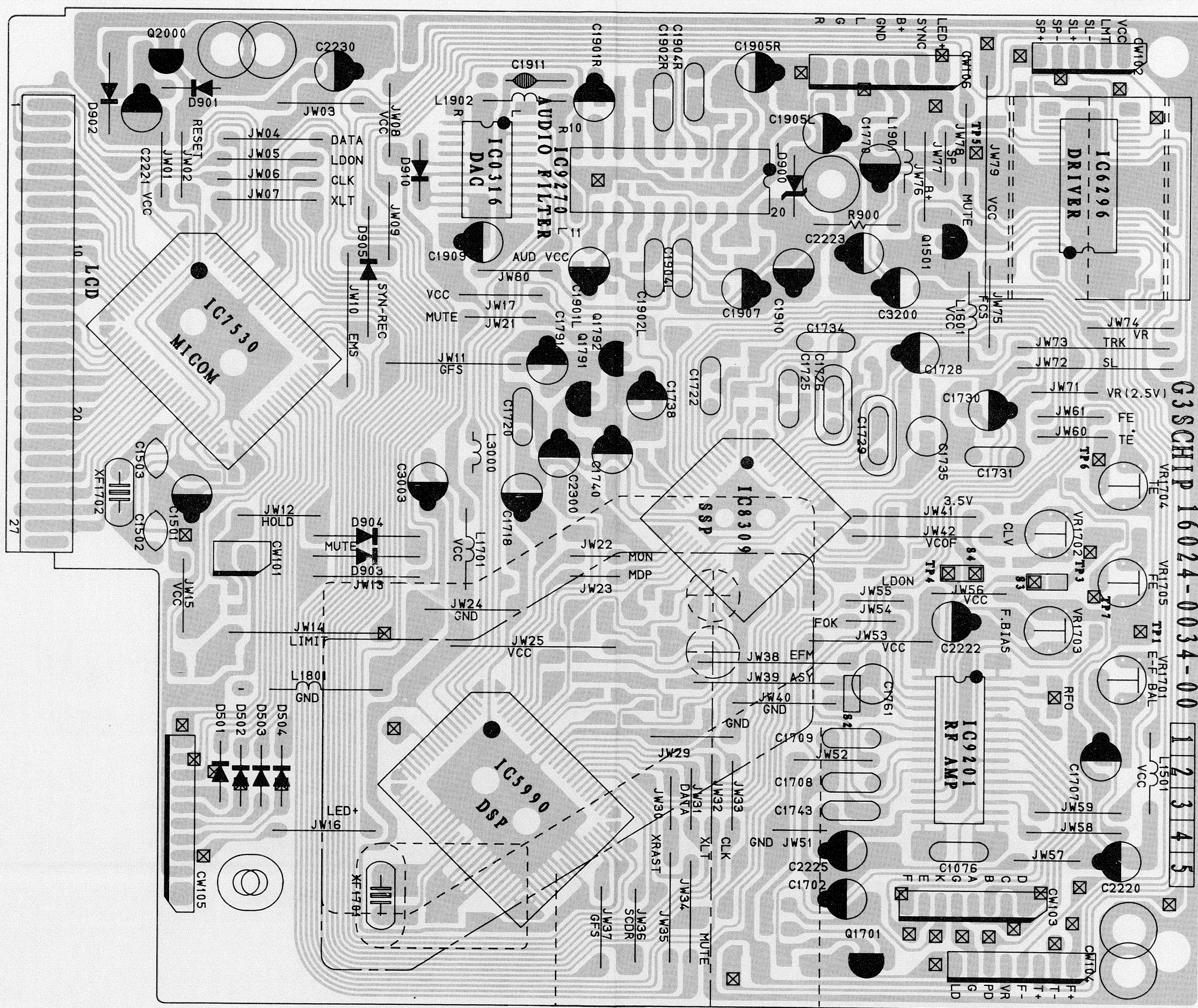


VOLT/DIV : 2V
TIME/DIV : 10mS

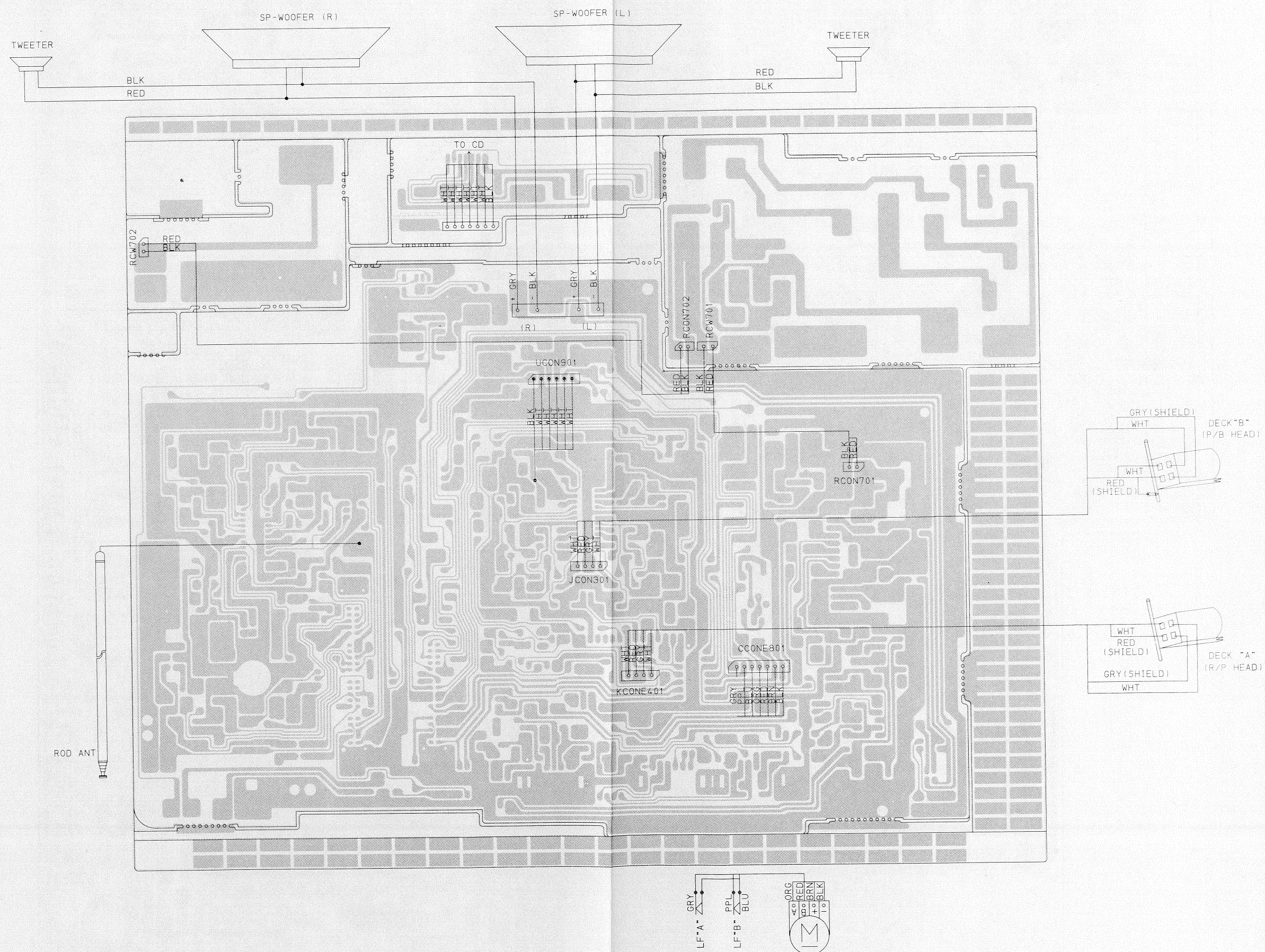
1. RADIO CASSETTE SECTION



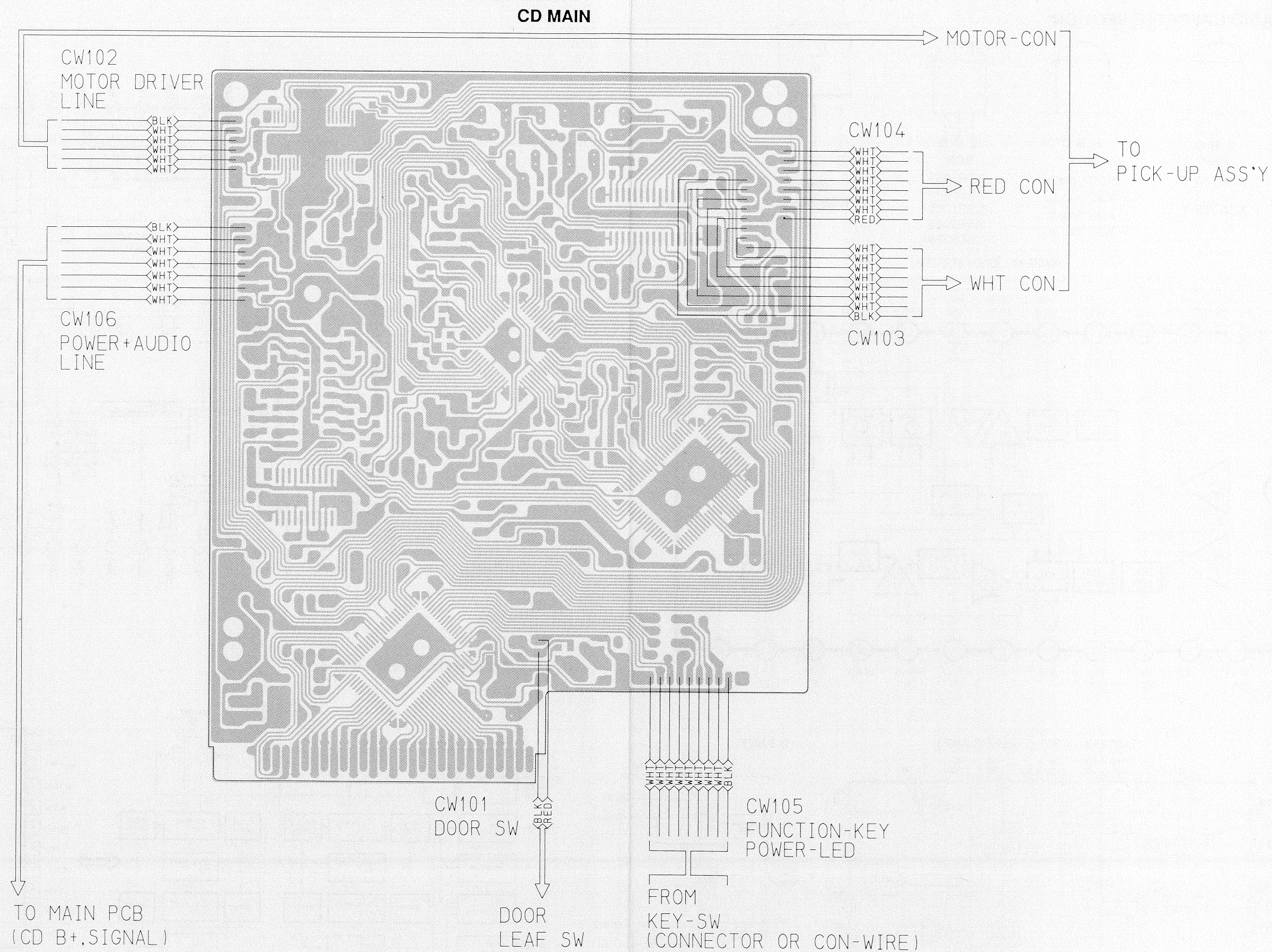
2. CD SECTION (PATTERN SIDE)



1. RADIO CASSETTE SECTION

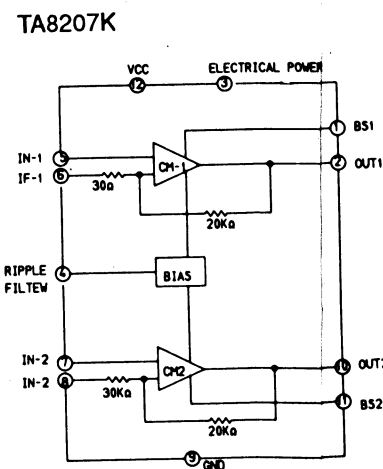
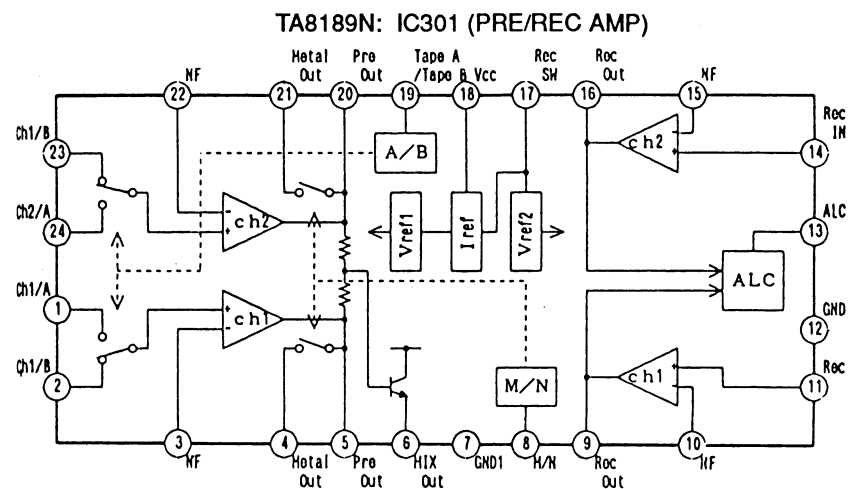
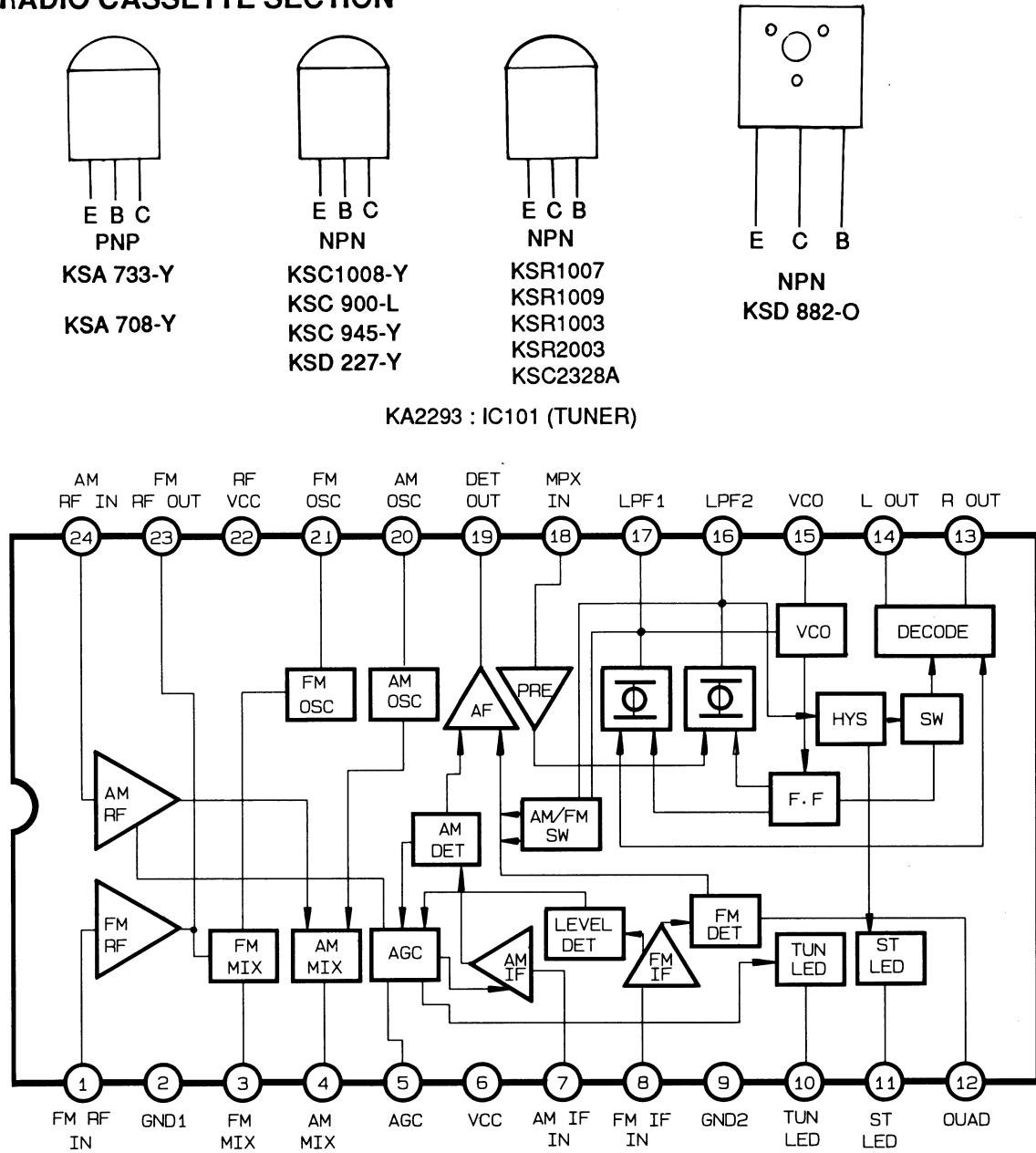


2. CD SECTION



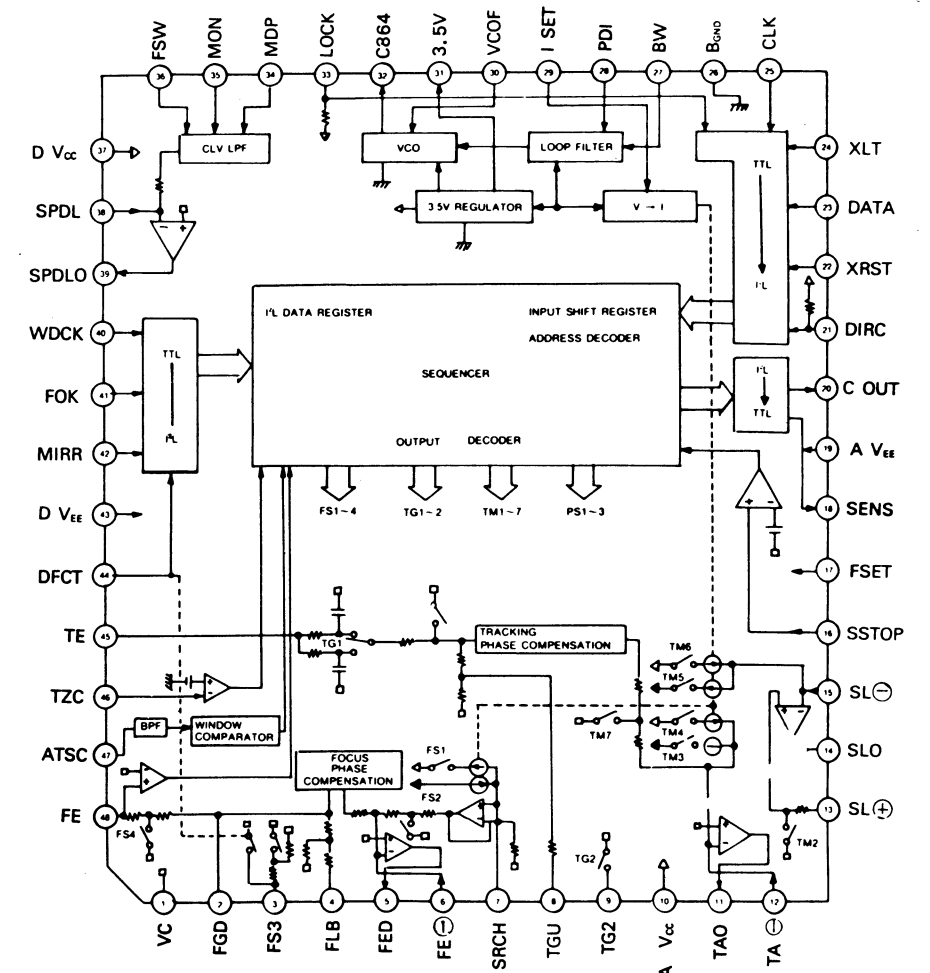
■ IC AND TR LEAD LAY OUT

1. RADIO CASSETTE SECTION

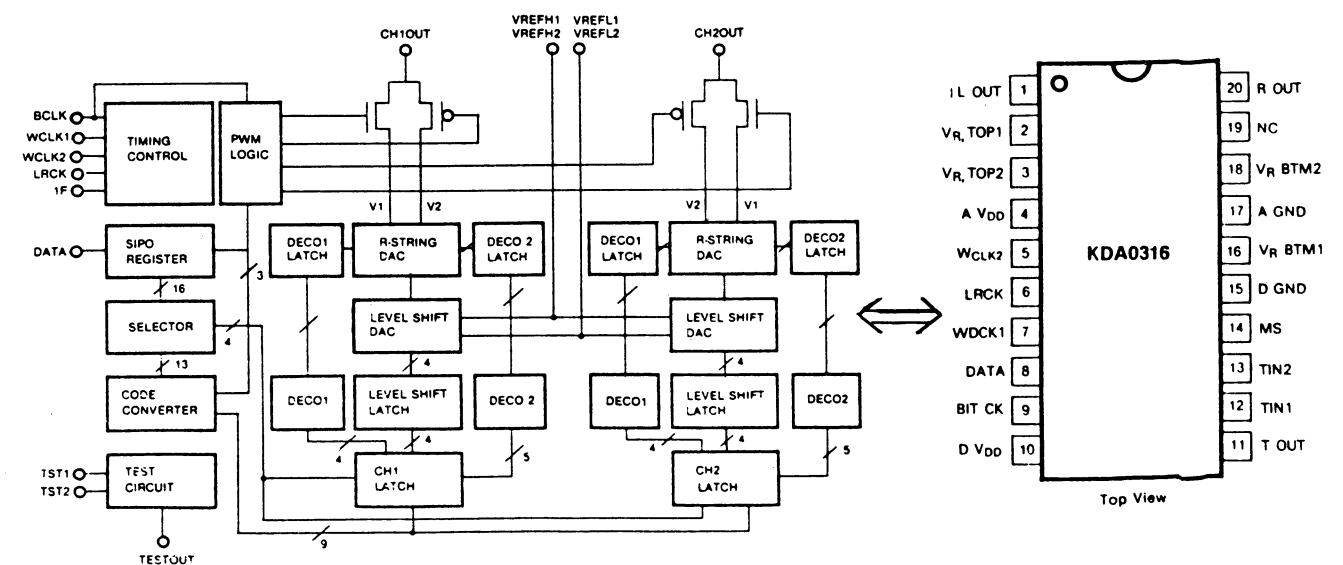


2. CD SECTION

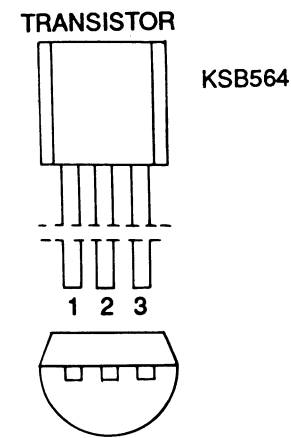
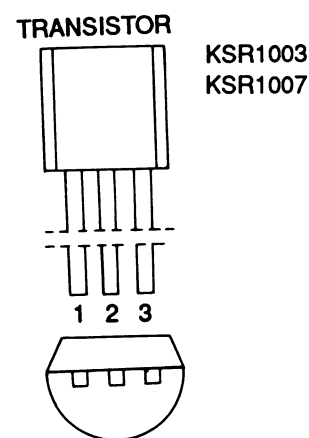
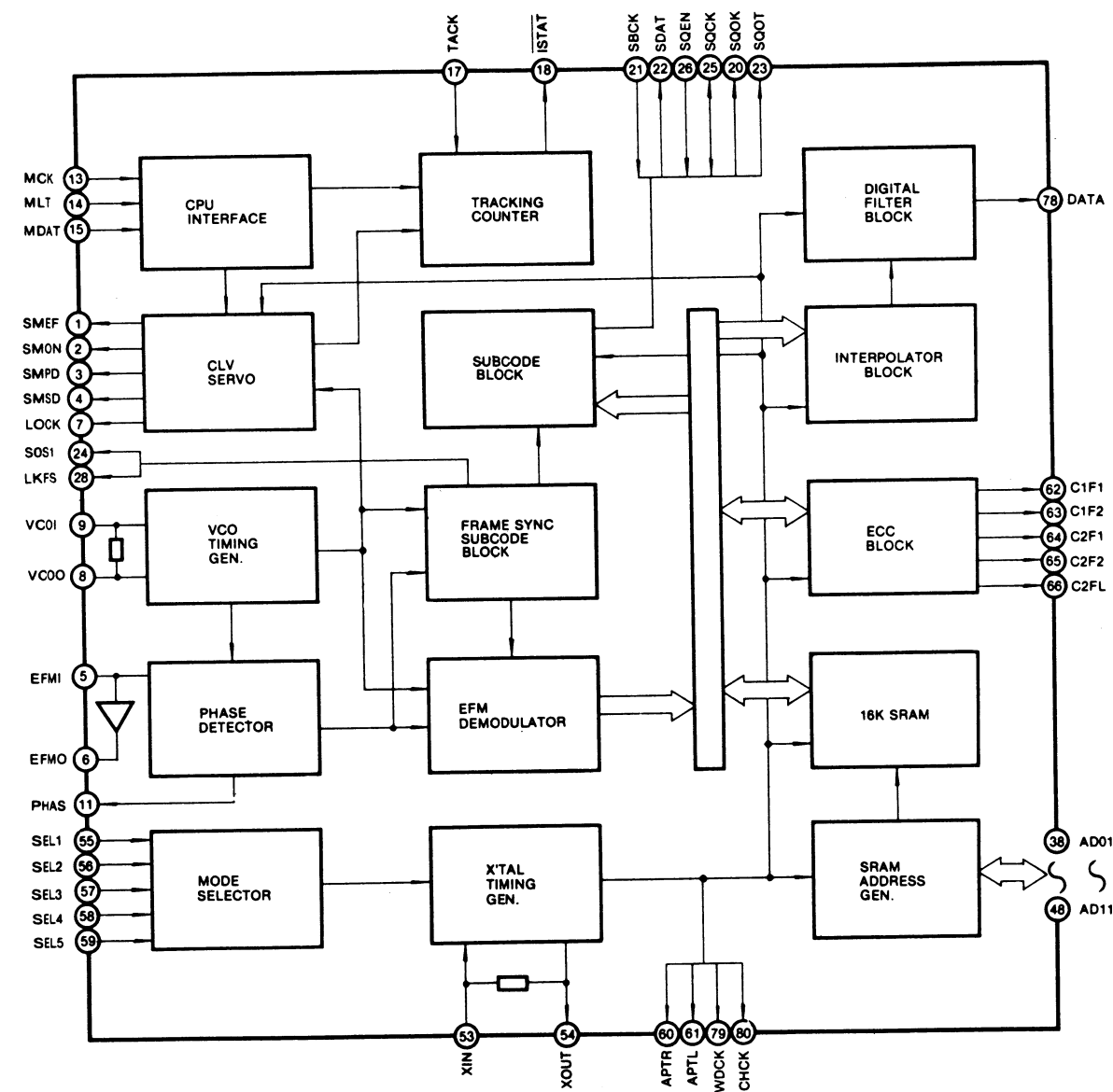
- KA8309 (SERVO SIGNAL PROCESSOR) : IC8309



- KDA0316LD (D/A CONVERTOR) : IC0316

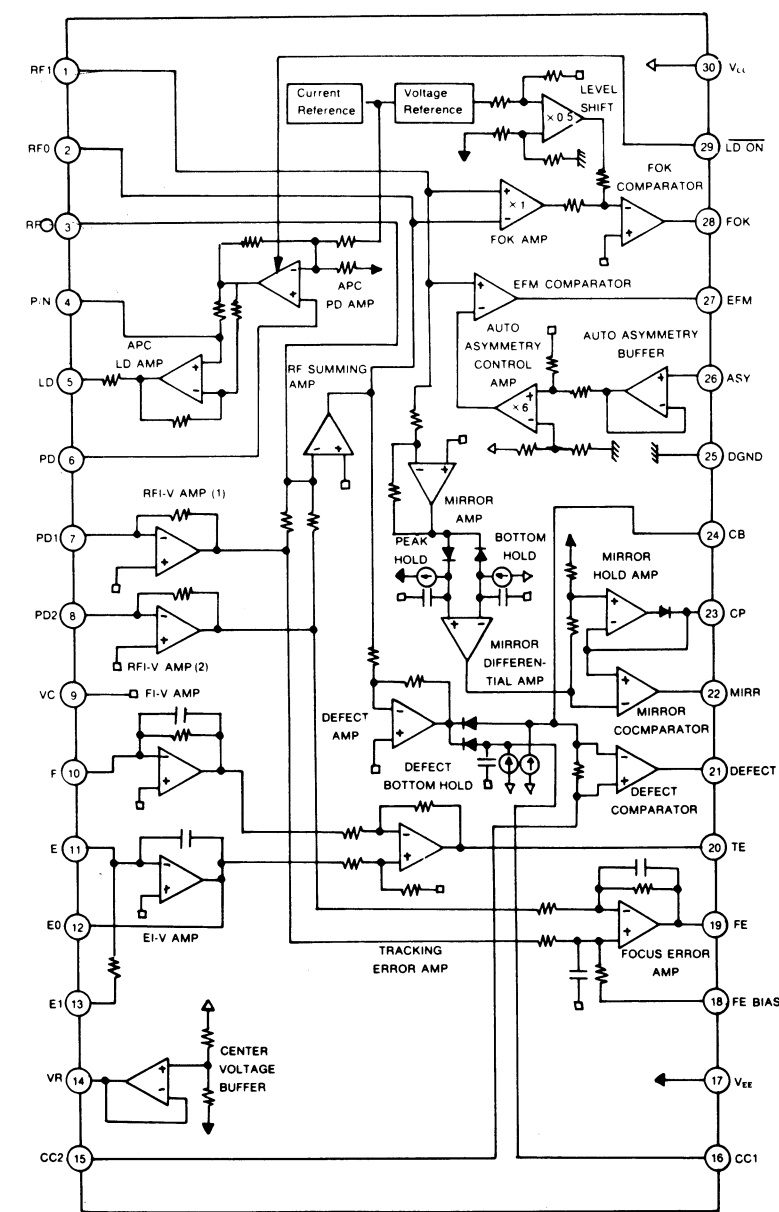


● KS5990 (DIGITAL PROCESSOR) : IC5990

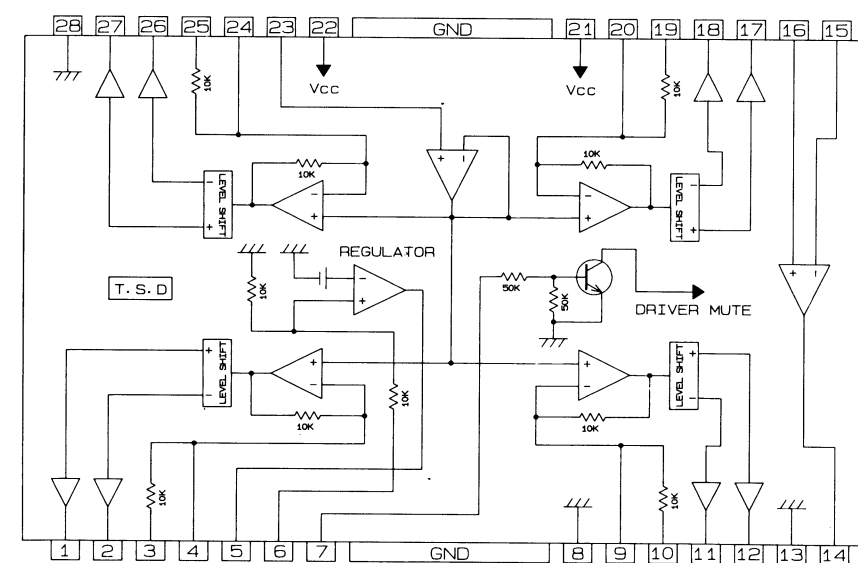


1. EMITTER 2. COLLECTOR 3. BASE 1. EMITTER 2. BASE 3. COLLECTOR

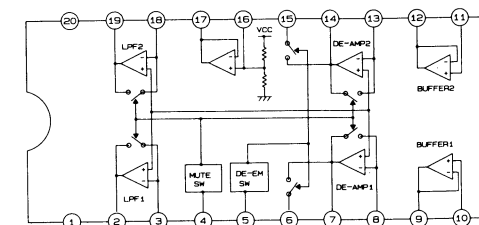
● KA9201 (RF AMP) : IC9201



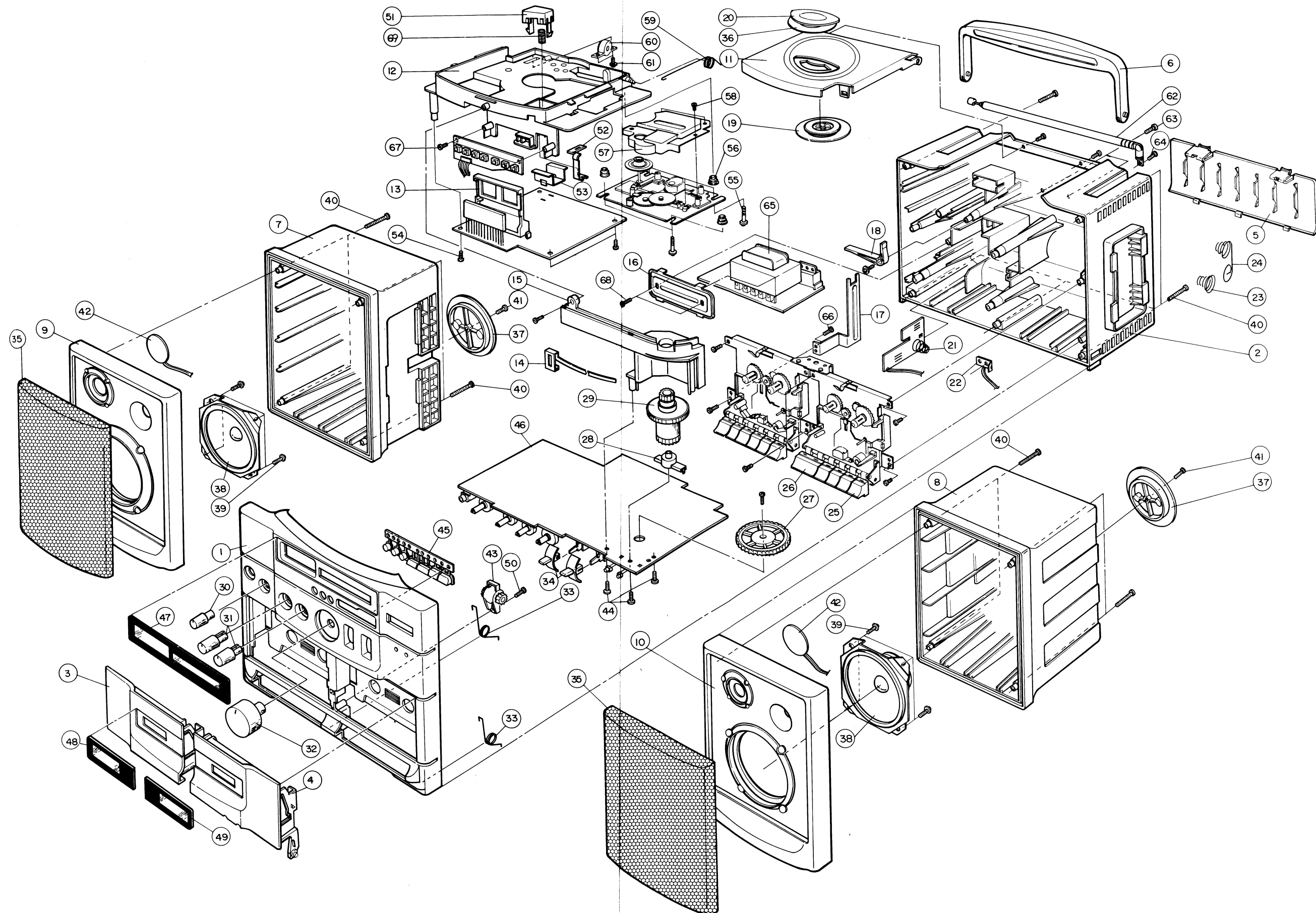
● KA9270 : IC9270



● BA6296FP (IC6296)



■ EXPLODED VIEW (PCD-720)



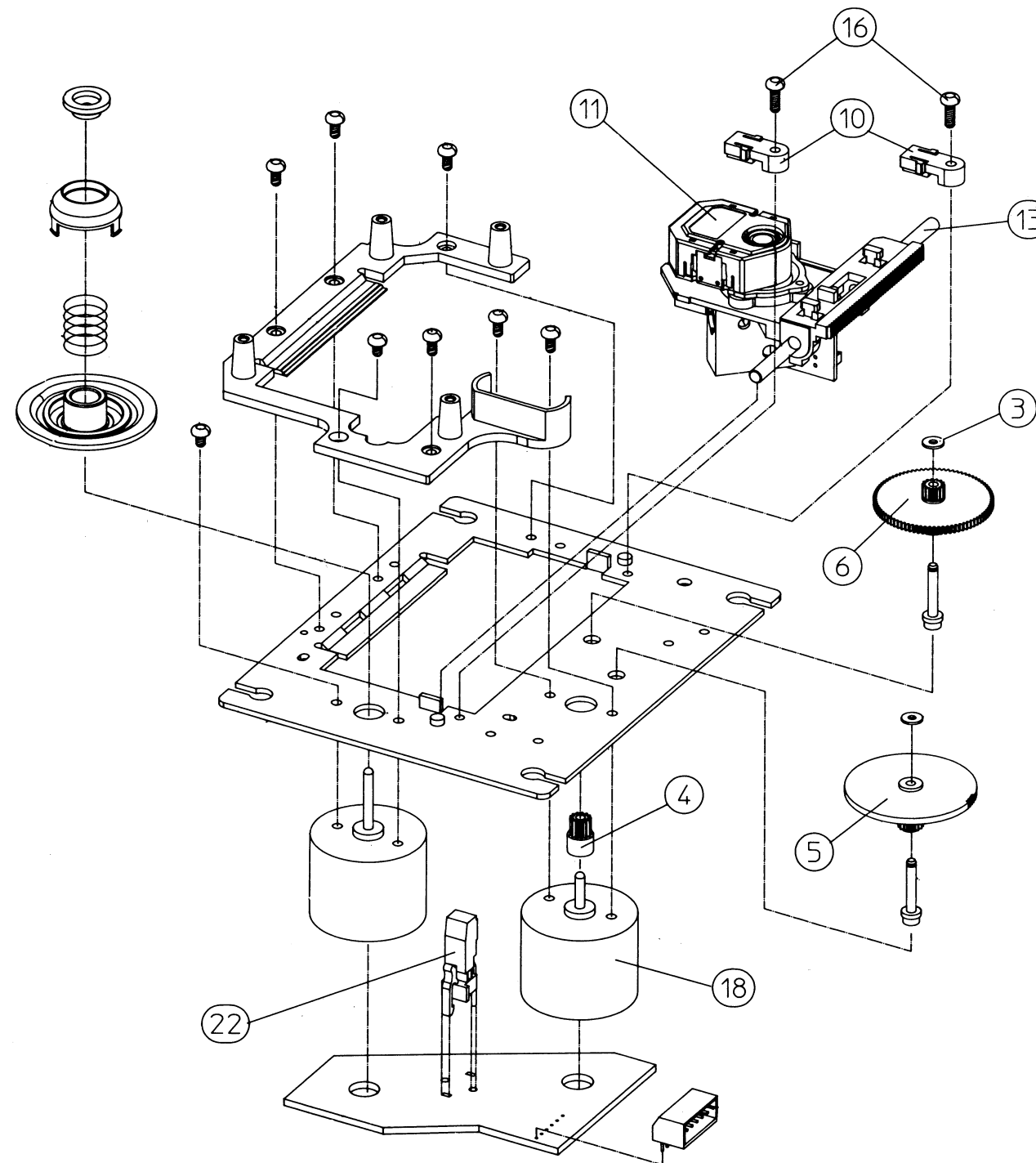
No.	CODE No.	DESCRIPTION	SPECIFICATION	Q'TY	REMARK
1	12001-0041-00	CABINET-FRONT	MIPS	1	* T.ONLY
1	12001-0041-01	CABINET-FRONT	MIPS	1	* L.ONLY
1	12001-0041-02	CABINET-FRONT	MIPS	1	* S.ONLY
2	12000-0044-00	CABINET-BACK	MIPS	1	*
3	14042-0023-00	DOOR-CASSETTE "L"	ABS	1	*
4	14042-0022-00	DOOR-CASSETTE "R"	ABS	1	*
5	14103-0007-00	LID-BATTERY	MIPS	1	*
6	14033-0008-00	HANDLE	ABS	1	*
7	12000-0045-00	SPEAKER BACK "L"	MIPS	1	*
8	12000-0046-00	SPEAKER BACK "R"	MIPS	1	*
9	12001-0042-00	SPEAKER FRONT "L"	MIPS	1	*
10	12001-0043-00	SPEAKER FRONT "R"	MIPS	1	*
11	14042-0021-00	DOOR-CD	ABS	1	*
12	12001-0029-00	CHASSIS-CD	ABS	1	*
13	13323-0036-00	HOLDER-LCD	ABS	1	*
14	14164-0006-00	POINTER	ABS	1	*
15	12202-0028-00	CHASSIS-TUNING	ABS	1	*
16	16624-578-600	BRKT-P/T	EGI t1.0	1	
17	13014-0041-00	BRKT-REC	EGI t1.0	1	*
18	11534-0009-00	LEVER-REC	ACETAL	1	*
19		CHUCK ASS'Y		1	
20	14073-0034-00	WINDOW-CD	ACRYL	1	*
21	16674-560-220	SPRING-BATTERY A	PWR	1	
22	16624-513-310	BRKT-ANT	SPTE T0.3	1	
23	16674-531-710	SPRING-BATTERY B	PWR	1	
24	16674-520-810	SPRING-BATTERY A	PWR	1	
25	14083-0114-00	KNOB-DECK	ABS	10	*
26	14083-0115-00	KNOB-DECK "A"	ABS	1	*
27	11514-0004-00	WHEEL-DRUM	ABS	1	*
28	13324-0035-00	HOLDER-KNOB TUNING	ABS	1	*
29	14084-0117-00	KNOB-TUNING	ABS	1	*
30	14084-0109-00	KNOB BALANCE	ABS	1	
31	14084-0112-00	KNOB TREBLE	ABS	2	
32	14084-0111-00	KNOB VOLUME	ABS	1	
33	12724-0043-00	SPRING EJECT DOOR	PWR 1.0	2	
34	14084-0110-00	KNOB LEVER	ABS	2	
35	14002-0012-00	SPEAKER GRILL	SPC t0.6	2	
36	19570-007-710	STICKER W/OA	TOYO AT-2700	1	
37	13323-0037-00	HOLDER SPEAKER	ABS	2	
38	A1300-0024	SPEAKER		2	
39	17048-130-101	SCREW	RH SPEC ; 2S-3x10	8	SPEAKER + SPEAKER FRONT
40	17448-130-201	SCREW	BH; B-3x20	8	SPEAKER + SPEAKER BACK
41	17458-130-121	SCREW	BH; B-3x12	2	SPEAKER BACK + HOLDER SPK
42	14259-500-140	PIAZO + WEETER		2	
43	15214-510-230	DAMPER GEAR (DOUBLE)	CA-W45	1	

No.	CODE No.	DESCRIPTION	SPECIFICATION	Q'TY	REMARK
44	17458-230-101	SCREW	BH ; 2S-3x10		MAIN PCB + CHASSUS TUNING
45	14083-0113-00	KNOB CD FUNCTION	ABS	1	*
46	16024-0050-00	MAIN PCB ASS'Y	1VO T1.6 PCD720	1	
47	14073-0035-00	WINDOW FRONT	PC t0.5	1	* T.ONLY
47	14073-0035-02	WINDOW FRONT	PC t0.5	1	* L.ONLY
47	14073-0035-03	WINDOW FRONT	PC t0.5	1	* S.ONLY
48	14074-0044-00	WINDOW CASSETTE 'L'	PC t0.5	1	*
49	14074-0045-00	WINDOW CASSETTE 'R'	PC t0.5	1	*
50	17458-130-121	SCREW	BH 3x12	1	DAMPER + CABINET FRONT
51	14083-0116-00	KNOB CD EJECT	ABS	1	*
52	11534-0008-00	LEVER EJECT	ACETAL	1	*
53	11124-0013-00	HEAT-SINK	ALS t2.0		
54	17458-230-101	SCREW	BH ; 2S-3x10		CA PCB + CD CHASSIS
55	15104-531-720	SHAFT-CD	FE FZW 2.6x11.5	4	
56	16174-503-410	RUBBER CD	SILICON	4	
57	16854-524-310	CAP PICK UP	ABS 06601		
58	17158-120-052	SCREW TAP	BH2 x 6		CAP PICK UP + MECHA
59	12724-0044-00	SPRING DWR CD	PWR 1.0	1	*
60	15214-506-011	DAMPER GEAR	POM	1	
61	171558-230-101	SCREW BH SPEC	2S-3x10	2	DAMPER + CHASSIS-CD
62	14509-316-100	ANTENNA	KDP-0024-A-0	1	
63	17118-530-123	SCREW BH		4	MAIN PCB + CABINET BACK
64	17048-130-101	SCREW		1	ANTENNA + CABINET BACK
65	12869	TRANS-POWER	57x28mm	1	
66	17098-120-045	SCREW		1	BRKT REC + CASSETTE DECK
67	17458-230-101	SCREW TAP	BH 3x10	1	CD CONTROL PCB + CA CHASSIS
68	17558-230-101	SCREW TAP SPEC	BH 2S-3x10	2	BRKT P/T + CABINET BACK
69	12724-0045-00	SPRING-LEVER EJECT	SUS 0.3	2	*
75	12869-225-400	TRANS-POWER		1	
76	12869-225-410	TRANS-POWER		1	
77	12869-225-420	TRANS-POWER		1	

NOTE : Code number of the item marked a star (*) may be different.

EXPLODED VIEW

1. CD DECK (CMS-V10)



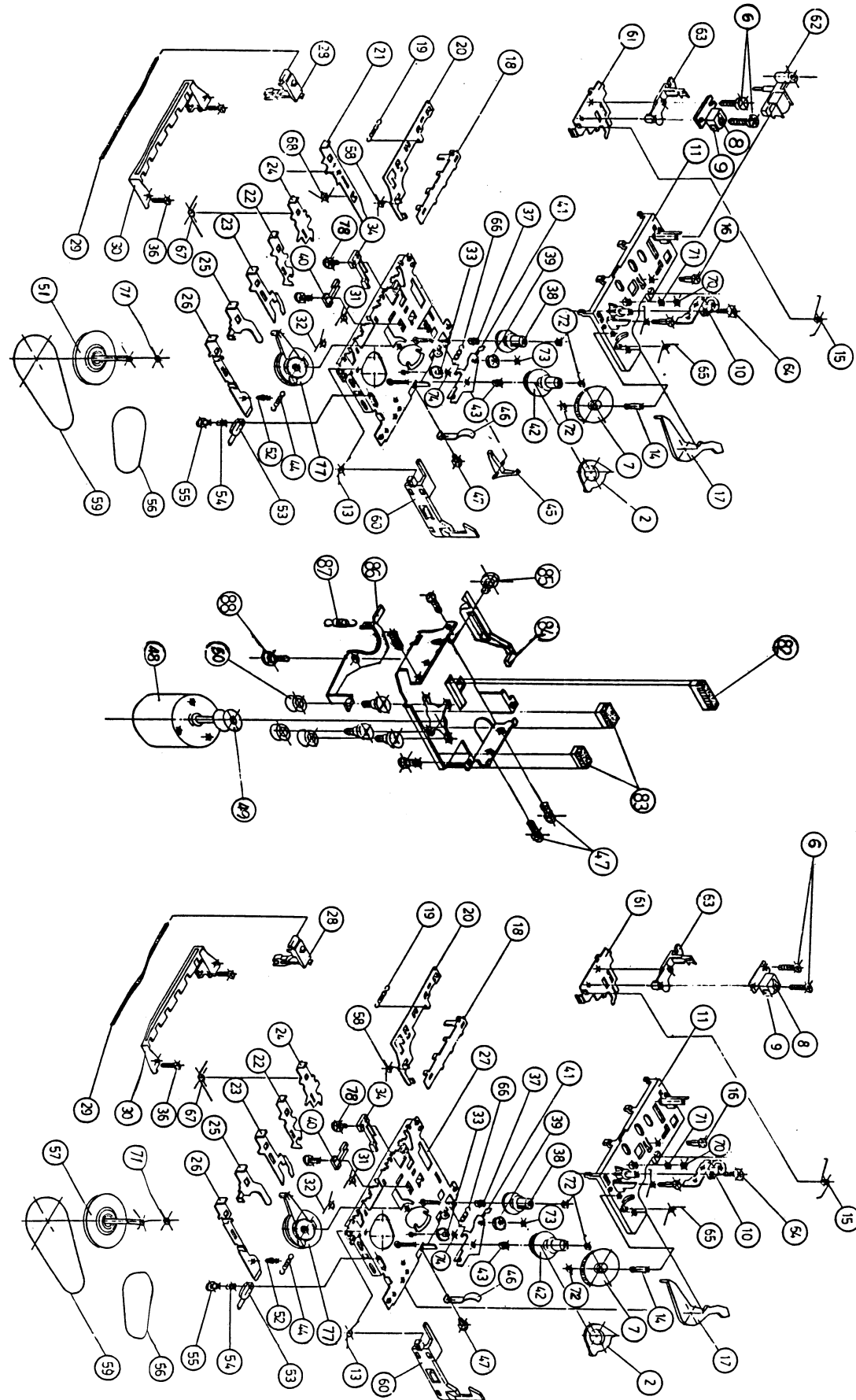
DECK ASS'Y : CMS-V10 (14929-407-010)

NO.	CODE NO.	DESCRIPTION & SPECIFICATION	Q'TY
4	15214-510-510	GEAR-P/U (A) ; P.O.M (DURACON KT-20)	1
5	15214-510-610	GEAR-P/U (B) ; NYLON 12	1
6	15214-510-710	GEAR-P/U (C) ; P.O.M (DURACON KT-20)	1
10	16033-505-210	HOLDER-SHAFT ; ABS 94HB	2
11	14239-101-610	PICK UP ; OPTICAL HEAD SOH 90T4	1
13	15104-503-410	SHAFT-P/U ; SUS 420J2 Ø3	1
16	17008-120-063	SCREW-PH ; +M2 x 6 FE FZB	2
18	14769-057-250	MOTOR-FEED ; RF-310T (SHAFT 10.9)	1
22	13564-601-100	LEAF-SW.; MSW-1731CVC	1

* Parts which are not described in the CD DECK list are not serviceable.
If you need any other parts except those described, apply CD DECK ass'y.

■ CASSETTE DECK EXPLODED VIEW

2-1 ADR1511FW



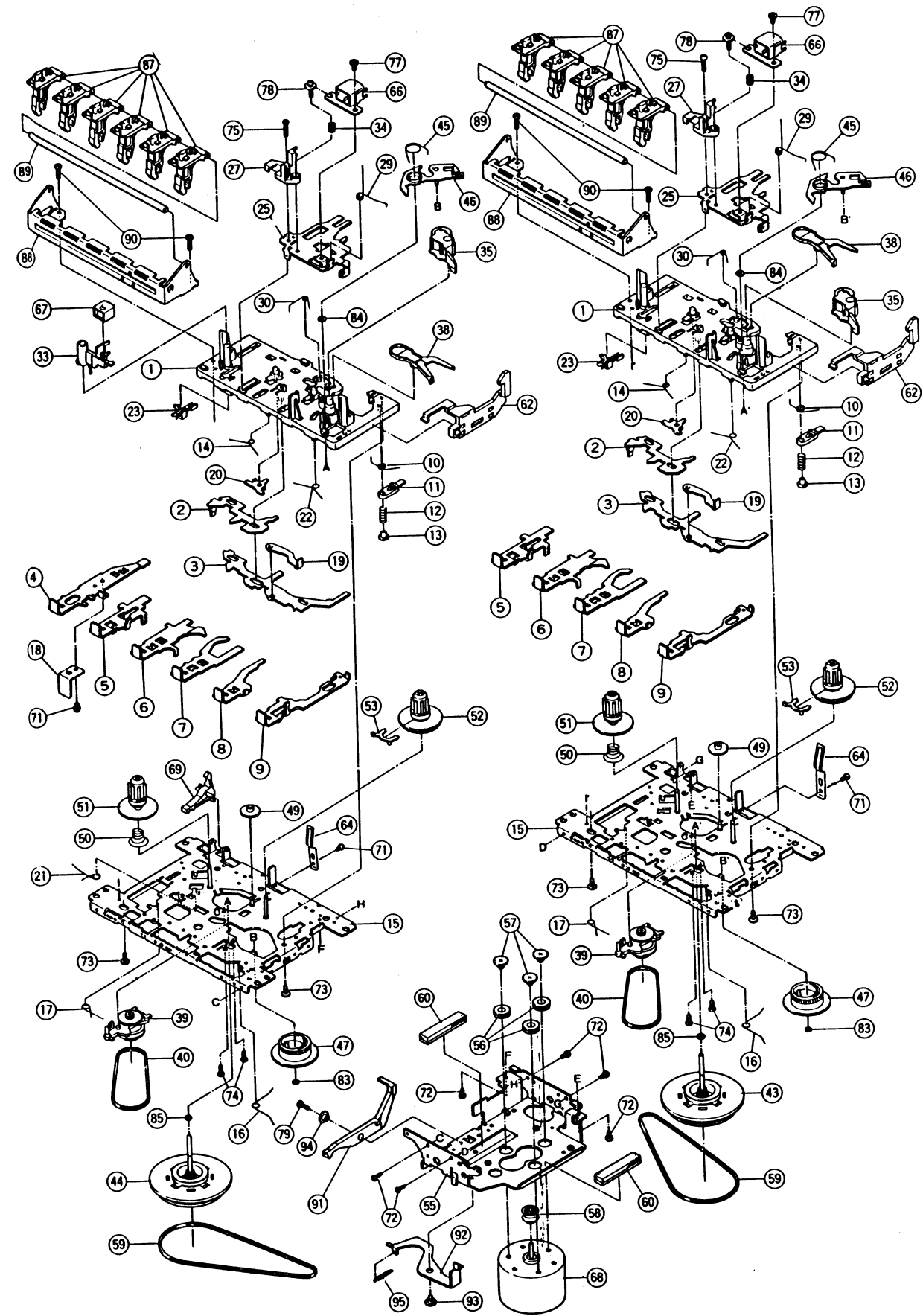
■ CASSETTE DECK PARTS LIST

* DECK ASS'Y : ADR1511FW(17159-0027-00)

No.	CODE No.	DESCRIPTION	SPECIFICATION	Q'TY
2	10000-607-102	SENSOR REEL	1153-00080AA	2
5	10000-542-002	E-HEAD	PHK380 MS16A	1
7	10000-607-107	GEAR CAM	11128-0391AA	2
9	10000-523-008	RP HEAD	MS 15R-AA2N1	2
10	10000-607-110	ASS'Y PINCH ARM	ADR15-006	2
17	10000-607-117	ARM SENSOR	11102-00530AA	2
28	10000-607-128	KEY KNOB	11133-00010AA	12
33	10000-607-133	GEAR FF	11128-00080AA	2
34	10000-607-134	SW LEAF (MAIN)	MSW2526GNBKC	2
38	10000-607-138	REEL S ASS'Y	ADR15-001	2
39	10000-607-139	GEAR ROLLER-T	11128-00050AA	2
42	10000-607-142	REEL T ASS'Y	ADR15-002	2
45	10000-607-145	LEVER REC SAFETY	11134-01000AA	1
46	10000-607-146	SP PACK	51299-02506XC	2
48	10000-502-020	MOTOR	EG530 YD2B	1
49	10000-607-149	PULLEY Y MOTOR	11145-00450AA	1
51	10000-607-151	FLY WHEEL ASS'Y-S	ADR15-003	1
53	10000-607-153	CAM PAUSE LOCK	11116-00010AA	2
55	10000-607-155	CAP	11117-00020AA	2
56	10000-607-156	BELT SUB	34.7ø x 1.0t	2
57	10000-607-157	FLY WHEEL ASS'Y-D	ADR15-004	1
59	10000-607-159	BELT MAIN	59.7ø x 1.0t	2
60	10000-607-160	LEVER EJECT (F)	11134-01220AA	2
62	10000-607-162	ARM MAGNETIC	11102-00520AA	1
63	10000-607-163	BASE HEAD-M	11105-00030AA	2
65	10000-607-165	SP PAUSE SAFETY	51263-02026	2
77	10000-607-177	ARM F.R ASS'Y	ADR15-005	2
84	10000-607-184	LEVER RELEASE	11134-01240AA	1
86	10000-607-186	LEVER SYNCRO	11134- 01280AA	1

NOTE : Parts which are not described in the DECK list are not serviceable.
If you need any other parts except those described, apply DECK ASS'Y (Only DECK ASS'Y is available).
The mechanical parts with no reference number in the above chart, though marked in the Exploded View, are not supplied.
Except for the parts indicated in the above list, you should order in an Assembly form.

2-2. TN21ZSW-1197 (SB10)

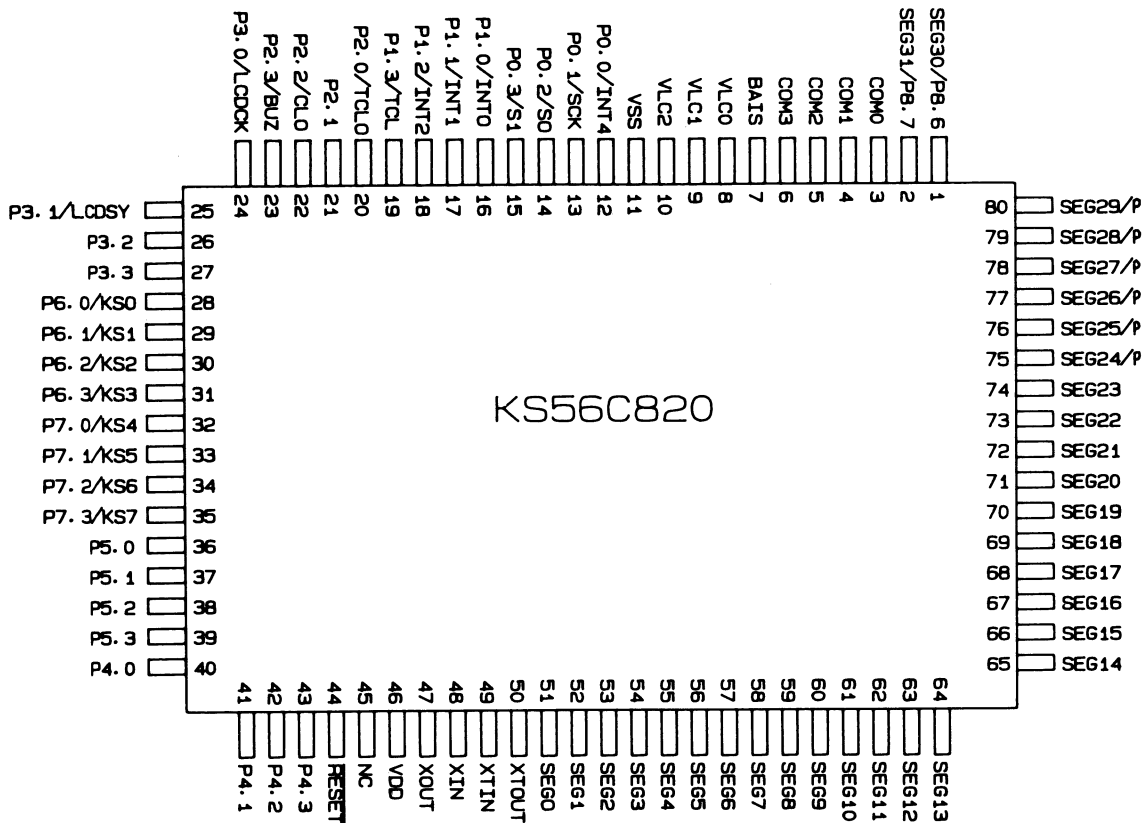


* DECK ASS'Y : TN 21ZSW-1197(SB10) 17159--0026-00

No.	CODE No.	DESCRIPTION	SPECIFICATION	Q'TY	REMARK
11	10000-268-011	PAUSE LEVER	1921-14-55	2	
13	10000-268-013	PAUSE STOPPER	1921-14-11	2	
23	10000-268-023	LEAF SWITCH	MSW1541T	2	
33	10000-268-033	MG ARM	1921-03-05	1	
35	10000-268-035	PINCH ROLLER ARM ASS'Y	1921-04-309	2	
38	10000-268-038	SENSING LEVER	1921-26-04A	2	
39	10000-268-039	RF CLUTCH ASS'Y	1921-07-302	2	
40	10000-268-040	RF BELT	1921-07-03	2	
43	10000-268-043	FLYWHEEL ASS'Y	1921-09-304	1	
44	10000-268-044	FLYWHEEL ASS'Y	1921-09-303	1	
47	10000-268-047	CAM GEAR	1921-26-02	2	
49	10000-268-049	FF GEAR	1821-10-70	2	
51	10000-268-051	SUPPLY REEL ASS'Y	1921-05-304	2	
52	10000-268-052	TAKE UP REEL ASS'Y	1921-05-303	2	
53	10000-268-053	SENDER	1921-05-60	2	
58	10000-268-058	MOTOR PULLEY	1921-12-13	1	
59	10000-268-059	MAIN BELT	1821-12-22	2	
62	10000-268-062	EJECT SLIDE LEVER	1921-13-02	2	
64	10000-268-064	PACK SPRING	1821-10-93	2	
66	10000-523-008	R/P HEAD	MS15RAA2N1	2	
67	10000-542-002	E HEAD	PHK380-MSI6A	1	
68	10000-502-020	MOTOR	EG530YD2B	1	
69	10000-268-069	RECORD SAFETY LEVER	1821-10-69	1	
87	10000-268-087	OPERATION LEVER	1821-31-07	12	
91	10000-268-091	P KICK LEVER (B)	1821-12-09	1	
92	10000-268-092	P KICK LEVER (A)	1821-12-68	1	

The mechanical parts with no reference number in the above chart, though marked in the Exploded View, are not supplied.
Except for the parts indicated in the above list, you should order in an Assembly unit.

● KS56C820 (MICOM) : IC7530



Pin Name	Pin Description	
P1.0-P1.3	4-bit Input	Internal pull-up resistor can be specified in 4-bit unit by software
P2, P7	4-bit Input/Output	
P3, P6	I/O mode selectable in 1-bit unit by software	
P4, P5	4-bit input/output, N-ch open drain	
P8.0-P8.7	Outputs in 1-bit unit (shared with segment outputs)	
SEG0-SEG23	Segment output for LCD display	
SEG24-SEG31	Segment output for LCD display (shared with Port 8)	
COM0-COM3	Common signal output for LCD display	
VLC0-VLC2	LCD power supply pin	
BIAS	LCD power supply control pin for 3/5V operating	
LCDCK	LCD clock output for display expansion	
LCDSY	LCD sync. clock output for display expansion	
TCL	Timer/Counter external clock input	
TCLO	Timer/Counter clock output	
INT0, 1, 2, 4	External interrupt input	
CLO	Clock output	
BUZ	2KHz clock output for buzzer	
KS0-KS7	Semi-interrupt input detecting external falling edge	
SCK, SI, SO	SCK: serial clock, SI: serial input, SO: serial output	
XIN, XOUT	Crystal/Ceramic or RC clock I/O for Main-system clock	
XTIN1 XTOUT		

■ CD PACK PARTS LIST

⚠ indicates parts for circuit safe guarding purpose. Therefore, when replacing, be sure to use specified parts only.

LOCATION NO.	CODE NO.	DESCRIPTION & SPECIFICATION	NEW	REMARK
IC0316	12109-303-150	IC-DAC ; KDA0316LD (BULK)		
IC5990	12119-203-770	IC-DS PROCESSOR ; KS5990/KS59910	★	
IC8309	12119-203-780	IC-SS PROCESSOR ; KA8309	★	
IC6296	B4012-0073	IC-LINEAR ; BA6296FP		
IC9201	12119-203-790	IC-RF AMP ; KA9201	★	
IC9270	A4012-0064	IC-AUDIO FILTER ; KA9270	★	
IC7530	12109-303-690	IC-MICOM ; KS56C820-06	★	
Q1701, Q1501	12149-202-050	TRANSISTOR ; KSB564A-Y		
Q2000	12159-301-780	TR-DIGITAL ; KSR1003		
Q1791, 1792	12159-301-800	TR-DIGITAL ; KSR1007		
	12169-301-290	DIODE-SW ; 1SS53/1N4148 CT : 6PF		
	12169-301-290	DIODE-SW ; 1SS53/1N4148 CT : 6PF		
	12429-411-109	DOIL-CHOKE ; BAL03ST1ROM		
L1901	12429-411-101	COIL-CHOKE ; LAL02TB 101K, 100UH		
XF1702	14534-504-040	CERAMIC-RESONATOR ; CSA 4.00MG		
XF1701	14539-401-050	X-TAL ; HC18U 16.9344MHz		
VR1701, 1704, 1705	11249-102-044	VR-SEMI TAPE-H ; DVN-DJA A03B24 (20K)		
VR1703	11249-102-064	VR-SEMI TAPE-H ; DVN-DJA A03B24 (50K)		
VR1702	11249-102-104	VR-SEMI TAPE-H ; DVN-DJA A03B23 (2K)		
LCD	12339-104-690	LCD-CD ; LE0636AP		

ELECTRICAL PARTS

1. RADIO CASSETTE SECTION

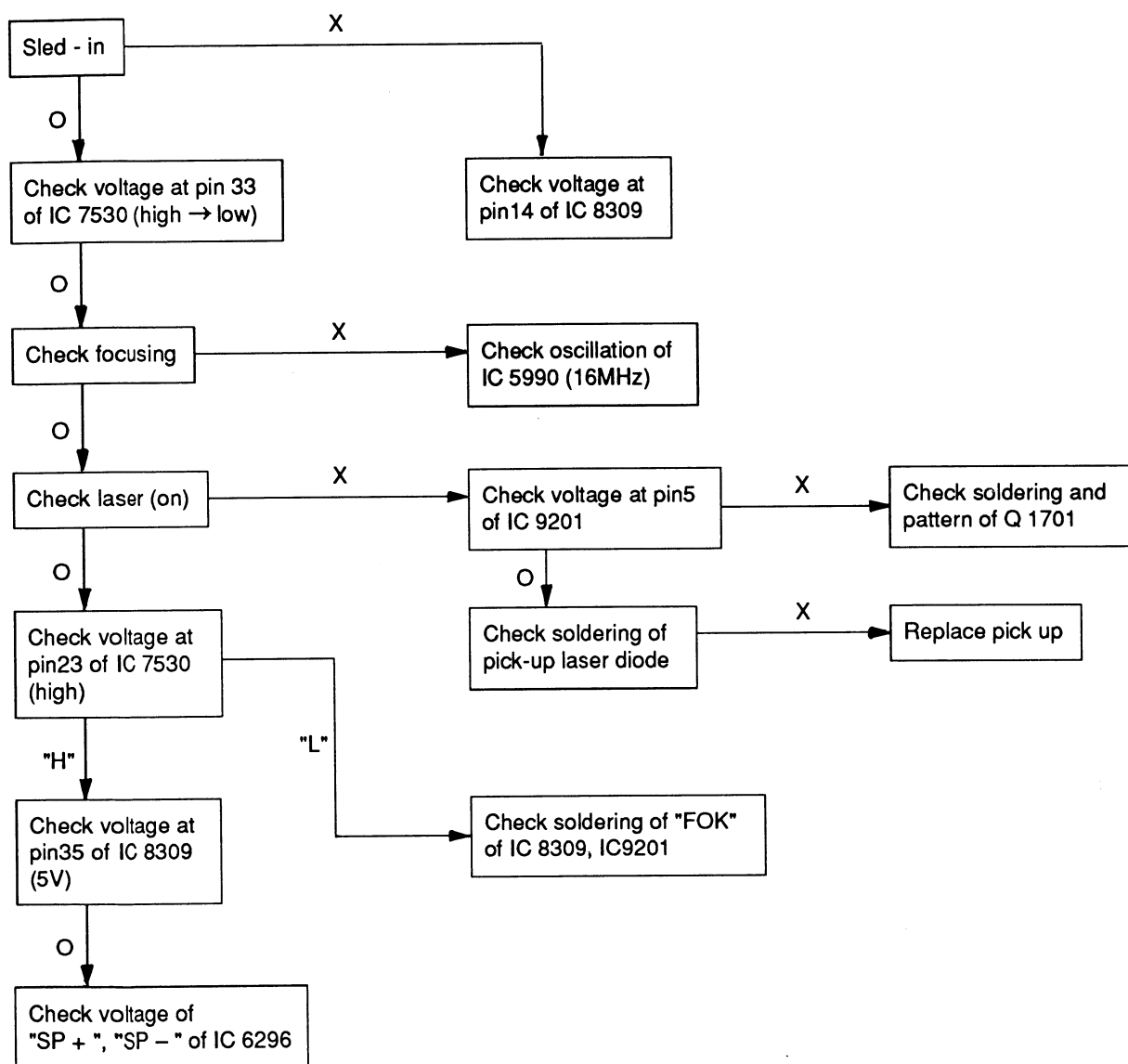
LOCATION NO	CODE NO	DESCRIPTION NO	SPECIFICATION	Q'TY	NEW	REMARK
FIC1	A4012-0072	IC-TUNER	KA2293	1		
JIC301	12109-401-840	IC-PRE/REC	TA8189N	1		
AIC601	12119-101-290	IC-POWER AMP	TA8207K	1		
RQ702	12149-401-900	TRANSISTOR	KSD882-Y	1		
QQ503, KQ403	12149-101-520	TRANSISTOR	KSA733-Y	3		
CQ801						
RQ701	12149-301-930	TRANSISTOR	KSC1008-Y	1		
QQ501, 551, KQ402	12159-301-790	TR-DIGITAL	KSR1009	3		
IQ1, UQ901, KQ401, 451	12159-301-800	TR-DIGITAL	KSR1007/108M	4		
LQ431	12149-301-840	TRANSISTOR	KSC900-L	3		
QQ502, 552						
CD801, 802	12169-201-090	DIODE-RECT	1N4002	2		
FD1, JD301	12169-403-290	DIODE-SW	1N4148/1SS53	6		
JD302, KD401						
KD402, 403						
RZD701	12169-403-600	DIODE-ZN	UZP-8. 2B	1		
RZD702	12169-403-740	DIODE-ZN	UZP 13B 12. 4-14. 1	1		
FD2	12169-501-160	DIODE-AFC	KS3302/	1		
RD701, 702	12169-201-140	DIODE-RECT	1N5392 TAPING	4		
703, 704						
BLED1, RLED1	12309-001-450	LED	SLR34VR(RED)	2		
FBPF	14529-403-010	FILTER-LC	PFW-B4	1		
ICF1	14529-301-420	FILTER-CERAMIC	SFE10. 7MA5L-A	1		
ICF2	14529-315-010	CERAMIC-FILTER	SFU455B	1		
ICF3	14529-302-920	FILTER-DISCRIMI	CDA10. 7MG16-A	1		
MCF1	14529-301-920	CERAMIC-RESONATOR	CSB456FRL16	1		
OT101	12619-058-603	COIL-AM OSC	290 uH	1		2BAND
OT102	12619-173-126	COIL 7 CAN	2. 13NH AQ FSW GREEN	1		3BAND(OPTION)
OT101	12619-176-011	COIL 7 CAN	740NH AQ FLW BLACK	1		3BAND(OPTION)
OT102	12169-050-703	COIL 7 CAN	120 uH	1		3BAND(OPTION)
LT401	12619-012-811	COIL-SEVEN CAN	1R65HH I-BIAS	1		
FL1	12609-133-420	COIL-H, SPRING	4T RBP 4R5D CW CLS	1		
FL2	12450-315-311	COIL-FM OSC	0. 5PI 0. 1UH 1. 7/8T	1		
OCH101	12429-070-350	COIL-CHOCK	AX1. 2UH-03(LAL03AN1R2M)	1		3BAND(OPTION)
OL101	12509-805-020	COIL-ANT SW	9. 5 M/M	1		3BAND(OPTION)
OL101, 102	12514-279-576	COIL-ANT ASS'Y	285UH/3. 5MHAR8X100MW/LW	1		3BAND(OPTION)
OL101	12513-249-627	COIL-AM ANT ASS'Y	PI 8X60 570UH	1		2BAND
OL102	12516-232-566	COIL-AM ANT ASS'Y	730 UH	1		3BAND(OPTION)
FVC	11819-309-510	VARICON-POLY	P2S-22BGLT	1		2BAND
FVC	11819-309-380	VARICON-POLY	P2S-22BPT A/C-H	1		3BAND(OPTION)
QVR501	11209-804-020	VR-DOUBLE	RK16K12E0 Z01 53B	1		
QVR502	11209-805-010	VR-ROUND, SIG	RK16K1150 002 53W	1		
QVR503' 504	11219-142-150	VR-ROUND	RK16K12A0 Z04 53B	2		
CSVR801	11249-102-104	VR-SEMI	TAPE-H :A03 B23 (2K Ω)	1		
AJ601	13339-101-502	JACK-HEADPHONE	SHQ9085-01-142(GRN)	1		
ATB601	13304-503-910	TERMINAL SPEAKER	LTL0490-0001R	1		

LOCATION NO	CODE NO	DESCRIPTION NO	SPECIFICATION	Q'TY	NEW	REMARK
FS1	13549-801-210	SWITCH-LEVER	00221013S 2C-2P	1		2BAND
FS1	13549-801-310	SWITCH-LEVER	T0083002 8C-3P	1		3BAND(OPTION)
AS2	A3014-0031	SWITCH-LEVER	6C4P 20.5MT ASH HTW7238	1	*	
JS3	A3008-0001	SWITCH-SLIDE	6C-2P ASH 00620452T	1		
LS4	13519-930-360	SWITCH-SLIDE	00230673 2C-3P	1		
US901, 902, 903, 904 905, 906 907	13559-910-100	SWITCH-TACT	SKHV10910L01	7		
JCON301	13349-512-562	CONNECTOR-WAFER	STICK 5267-04A 4P-TYPE	1		
KCON401	13349-512-550	CONNECTOR-WAFER	STICK 5045-04A 4P-TYPE	1		
RCON701, 702	13349-512-561	CONNECTOR-WAFER	STICK 5267-02A 2P-TYPE	2		
CCON801	13349-512-568	CONNECTOR-WAFER	STICK 5267-07A 7P-TYPE	2		
UCON901						
JCW301	13029-148-130	CONNECTOR-WIRE	5264-01 1533#28 300M/M	1		
KCW401	13029-448-130	CONNECTOR-WIRE	5102-04 1533#28 300M/M	1		
RCW701	13078-472-115	CONNECTOR-WIRE/B,	5264-02/5395-02 150M/M	1		
RCW702	13078-172-215	CONNECTOR-WIRE/B,	5102-02/5395-02 150M/M	1		
CCW801	13029-477-230	CONNECTOR-WIRE	5264-07 1007#26 300	1		
UCW901	13079-417-125	CONNECTOR-ASSY, BN	5264-07/5264-07 250M/M	1		
RR701	11058-277-479	R-FUSIBLE	RF 1/4T 4, 7-J	1		⚠
RT701	12869-225-430	TRANS-POWER	EI57X28 115 / 230V	1	*	OPTION ⚠
RT701	12869-225-420	TRANS-POWER	EI57X28 120 / 220V	1	*	OPTION ⚠
RT701	12869-225-410	TRANS-POWER	EI57X28 230 / 240V	1	*	OPTION ⚠
RJ701	13354-501-310	SOCKET-2P, SW (EP)	HSC1463-01-0101(PIN)	1		OPTION ⚠
RJ701	13354-501-320	SOCKET-2P, SW (CP)	HSC1466-01-0101(PIN)	1		OPTION ⚠
RJ701	B3043-0005	SOCKET-2P, SW (EP)	HSC1563 (UL/CSA)	1	*	OPTION ⚠
RF701	B3065-0082	FUSE	TL250V 2.5A UL/CSA GMC	1		OPTION ⚠
RF701	14709-441-262	FUSE	T250V 2.5A 20 EUR	1		OPTION ⚠
RF701	14709-241-110	FUSE	T250V 315mA 20 EUR	1		OPTION ⚠

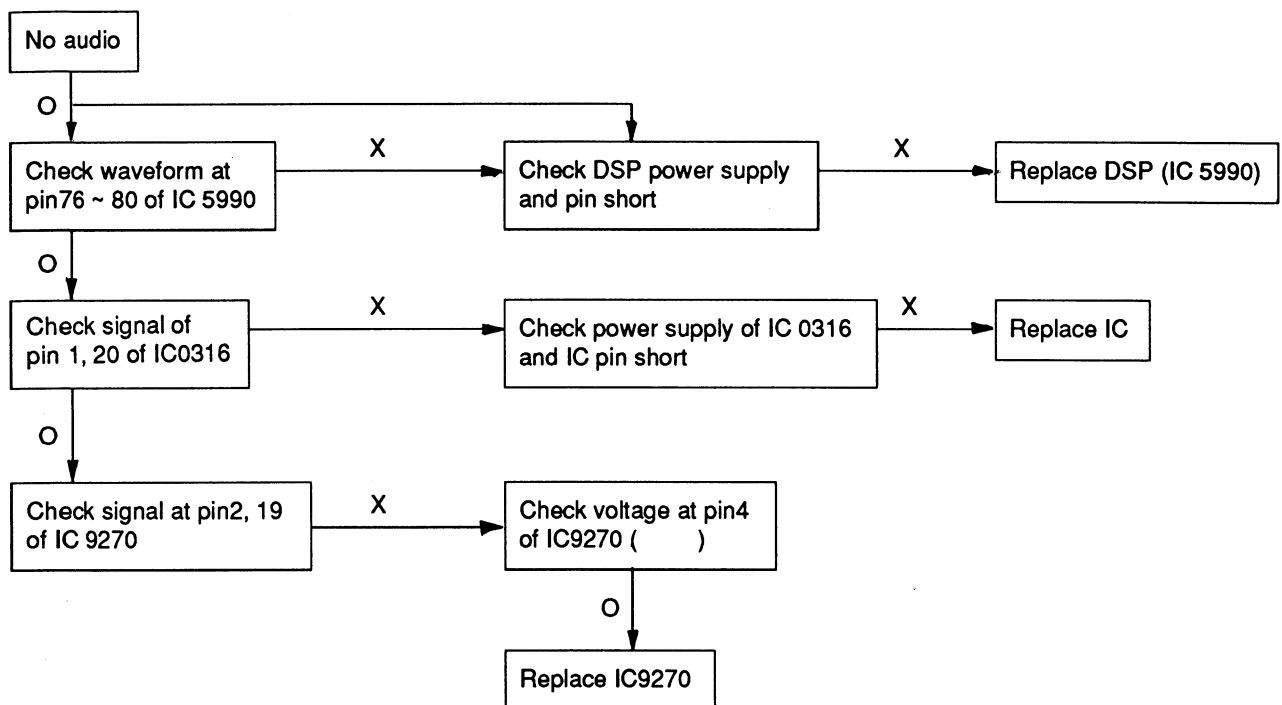
* ⚠ indicates parts for circuit safe guarding purposes.
Therefore, when replacing, be sure to use specified parts only.

■ TROUBLE SHOOTING (CD)

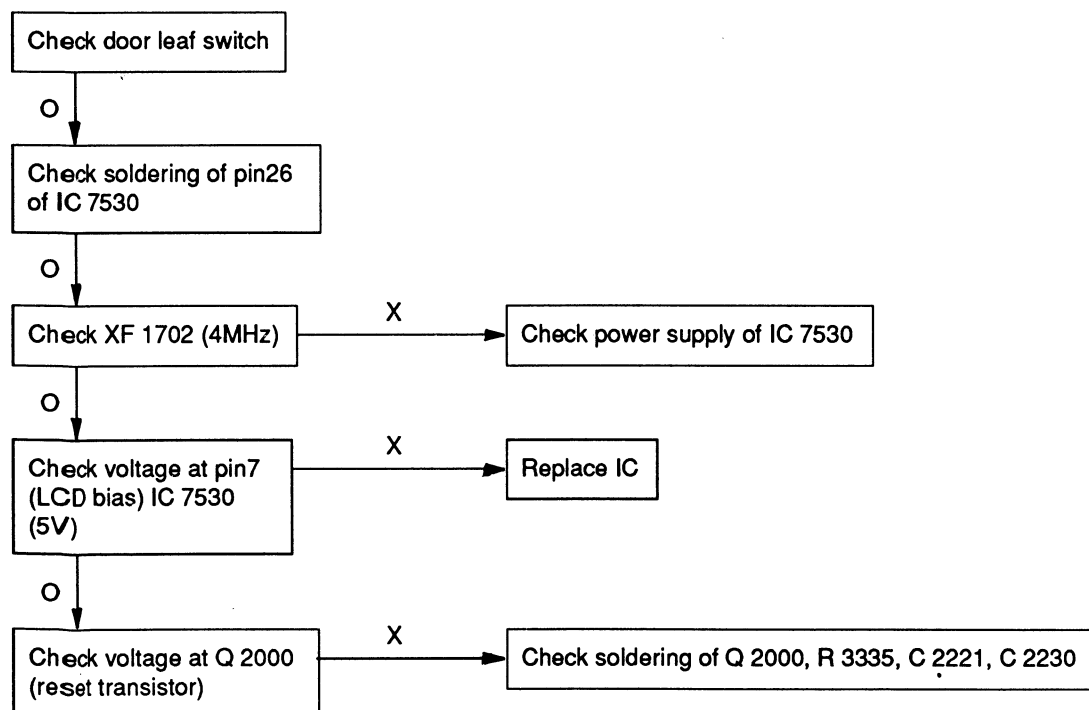
4) DISC NOT ROTATING



2) NO AUDIO



3) DISPLAY NOT WORKING



■ ABBREVIATION LIST

AC	: Alternating Current	MHz	: MegaHertz
ADJ	: ADJustment	MICOM	: MICRo COMputer
AFC	: Automatic Frequency Control	MIN	: MINute
ALC	: Automatic Level Control	MIX	: MIXer
AM	: Amplitude Modulation	mm	: millimeter
AMP	: AMPlifier	MOD	: MODulation
ANT	: ANTenna	MPX	: MultiPleX
ASSY	: ASSEmbly	mV	: mili Voltage
		MW	: Medium Wave
B	: Base	mW	: milli Watt
BH	: Bold Head		
BLK	: BLack	N	: Negative
BLU	: BLUe	NFB	: Negative FeedBack
BPF	: Band Pass Filter	nm	: nano meter
BRN	: BRoWn		
BRKT	: BRackeT	ORG	: ORanGe
		OSC	: OSCillator
C	: Collector, Capacitor		
CD	: Compact Disc	P	: Point, Positive
CF	: Ceramic Filter	PB	: PlayBack
Ch	: Channel	PCB	: Printed Circuit Board
cm	: centimeter	PF	: Pico Farad
CIRC	: Cross Interleave Reed solomon Code	P/T	: Power Transformer
CLV	: Constant Linear Velocity	P/U	: Pick Up
COL	: COLon		
COM	: COMmon	Q'TY	: QuantiTY
CON	: CONnector		
		R	: Right, Resistor
D	: Depth	RAM	: Random Access Memory
D/A	: Digital to Analog	REC	: REcOrd
DAC	: Digital to Analog Conveter	REG	: REGulator
dB	: deciBel	REW	: REWind
DC	: Direct Current	RF	: Radio Frequency
DET	: DETector	RH	: Round Head
DEV	: DEViation	ROM	: Read Only Memory
DIV	: DIVision	R/P	: Record/Play
DSP	: Digital Signal Processor	rpm	: revolutions per minute
E	: Emitter	sec	: second
E.F	: Eight to Fourteen	SEL	: SELelector
E-HEAD	: Erase HEAD	SPK	: SPeaKer
EQ	: EQualizer	SSG	: Standard Signal Generator
		SSP	: Servo Signal Processor
F.Bias	: Focus Bias	ST	: STereo
F.E	: Focus Error	SVR	: Semi Variable Resistor
FF	: Fast Forward	SW	: SWitch, Short Wave
F.FWD	: Fast ForWarD	SYNC	: SYNChronous
Fig	: Figure		
FM	: Frequency Modulation	T.E	: Tracking Error
FOK	: Focus OK	TP	: Test Point
FREQ	: FREQuency	TR	: TRAnsistor
		TRANS	: TRANSformer
GND	: GrouND		
		V	: Volt
H	: Height, High	VCO	: Voltage Controlled Oscillator
Hz	: Hertz	Vpp	: Voltage peak to peak
		VR	: Variable Resistor
IC	: Integrated Circuit	VREF	: REFeRence Voltage
IF	: Intermediate Frequency	V/SEL	: Voltage SELelector
IFT	: Intermediate Frequency Transformer	VTVM	: Vacuum Tube Volt Meter
I/O	: Input/Output		
INTRO	: INTROduction	W	: Watt, Weight
		WHT	: WHiTe
KHz	: KilloHertz		
Kg	: Kilogram	X-TAL	: crystal
L	: Left, Low		
LCD	: Liquid Crystal Display		
LED	: Light Emitting Diode		
LPF	: Low Pass Filter		
LSI	: Large Scale Integration		
LW	: Long Wave		